TROPICAL DISEASES BUREAU.

# TROPICAL DISEASES BULLETIN.

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## MALARIA.

THOMSON (John D.). **Notes on Malaria.**—*Jl. Roy. Army Med. Corps.* 1917. Oct. Vol. 29. No. 4. pp. 379–411. With 1 plate & 8 text-figs.

For searching observation and clear thinking this paper touches high-water mark. It is full of facts—many of them novel—which are shown in all their bearings and synthesized with fastidious judgment; the conclusions comprehend the facts and do not go beyond them; and speculation is apposite and restrained. These features are particularly apparent in the second and most original part of the paper dealing with some interesting contingencies and episodes in the life-history of the malaria-parasites.

Part I contains a critical account of the author's observations in the treatment of the active stages of the disease by intravenous injections of quinine. MACGILCHRIST'S opinions on quinine by injection are weighed, and are answered, so far as intravenous injection is concerned, by a technique that ensures the high dilution of the drug postulated by MACGILCHRIST. The author's principle is to get the necessary dilution accomplished by the circulation of the blood itself, and this is effected by extremely slow injection through a needle of very fine bore. The injection always used was a 20 per cent. solution of the bihydrochloride in saline, scrupulously prepared and sterilized. In making an injection 15 to 20 seconds are occupied in injecting each cc., and a pause of some seconds is made between each cc. injected. The exact technique is fully described.

In 18 consecutive cases of malignant tertian in the active stage a single intravenous injection of 5 cc. of the standard 20 per cent. solution (i.e. 15 grains of quinine), given as soon as the nature of the fever was determined, broke the attack in every case, so that subsequently the temperature could be kept down by mouth-doses of quinine which before the injection were impotent. Ring-forms disappeared quickly from the peripheral circulation, but not crescents.

In 32 cases of benign tertian a single intravenous injection of 4 cc. of the standard 20 per cent. solution (i.e. 12 grains of quinine), given during a paroxysm, broke the attack, so that the paroxysm next in expectation did not occur. All forms of the circulating parasite were affected, but not equally, the gametocytes disappearing last of all.

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Two interesting incidents of the author's experience, relating respectively to galyl and tartar emetic, are recorded.

An active case of malignant tertian had been treated by one of the physicians at the King George Hospital (where all the work under reference was done) with a full intravenous dose of galyl. The author examined the case daily for the next three days, but neither ring-forms nor the patient's temperature seemed to be influenced in the slightest degree.

In a case where the only forms of circulating parasites that could be detected were crescents 6 centigrammes of tartar emetic were given by intravenous injection: instead of killing the crescents, it either produced or hastened conditions favourable to the onset of a relapse of benign tertian, the coexistence of which in a latent form had not been suspected. A second dose of 8 centigrammes of tartar emetic was given 9 days after the first: no effect was manifest upon the crescents and the development of the relapse of the coexistent benign tertian was not arrested. The author criticises ROGERS' suggestion as to the conditional use of tartar emetic very fairly, as well as his loose and arbitrary terminology.

Part II, which deals *inter alia* with SCHAUDINN'S " parthenogenetic " theory of malaria-relapses, is a contribution to natural knowledge of the highest importance. It is a discerning presentation of a cautious piece of work, and the text must be read in company with the plate—which, most unfortunately, has not been reproduced in colour owing to the difficulties of the time.

The author begins with a criticism of SCHAUDINN'S use of the term parthenogenesis. Parthenogenesis, as a well understood biological term, implies that an unfertilized ovum, or virgin female gamete, under certain conditions reaches exactly the same range of development as a zygote, or ovum conjunct with a male gamete. Now, in the normal course of development a zygote of *P. falciparum* terminates in a progeny of sporozoites, and if parthenogenesis in this species were indeed a fact, the unfertilized female gamete should likewise develop into a progeny of sporozoites.

This is not a mere dialectic point. It goes to the root of things, and not only lays bare a misconception of terms and a confusion of thought, but shows that in postulating the reversion of a gamete into a schizont—the gamete always being a peculiarly-determined and highly differentiated cell—SCHAUDINN invoked a phenomenon which, so far as is known, is unparalleled in biology. Nature, indeed, hath framed strange ova in her time: some, for instance, that become the pabulum of a single one among them that develops into an embryo: but a gamete that reverts to the status of an ordinary non-sexual cell is a phenomenon that demands very ample confirmation.

The author next criticises SCHAUDINN'S venue. The preparations in which that author observed his questionable macrogametosporonts were made within the 48 hours antecedent to the actual paroxysm of a relapse at $3\frac{1}{2}$ months; but, as the author points out, to expect to find at that moment forms that *initiate* the series of schizogonies implied in a relapse, is as unreasonable as to expect to find, on the twelfth day of incubation of a normal primary infection, the initial sporozoites of that infection.

So far from confirming SCHAUDINN'S observations, the author in a series of descriptions and extremely accurate drawings (as those can testify who have seen his beautiful slides), demonstrates, from films of peripheral blood taken both during and after paroxysms of relapsing cases of malignant tertian, various combinations of ordinary gametocytes with ordinary schizonts that closely resemble the figures interpreted and published by SCHAUDINN as schizogony of macrogametes. Several types of combination are represented, some of which (e.g. two sporonts in one cell, and two gametocytes in one cell) are familiar, while all the others have possibly been seen—but have never been recognized—by other observers: just as generations of demonstrators demonstrated the gills of the common lobster to generations of students, without observing, though they might have seen, a small pair on the seventh appendages, until at last the pair was recognised by an unusually observant student.

It is highly probable, therefore, that the author's observations, and his interpretation of SCHAUDINN'S so-called parthenogenesis as a fortuitous combination of a gametocyte and a sporont will soon be amply confirmed: the only condition necessary, as the author states, is that there shall be mature gametocytes present in the blood when the films are made.

The probable explanation of the persistence of gametocytes in long chronic cases is discussed, as well as the theory of relapses in general; but these are conjectural matters which, though ably handled, are here precluded by limitations of space.

The author concludes with an account of some final phases in the development of crescents, which have not hitherto been described. His observations were made on a film of blood known to contain many crescents. The film, after moist incubation at 30° C. for a short time, was fixed with osmic acid vapour for 15 seconds and then with methyl alcohol, and stained with Giemsa. A series of crescents of both sexes were observed, and some are figured. The maturation, by extrusion of polar bodies, is equally exhibited in both sexes. In both sexes there is a limiting membrane: in the male it is thinner and gives way diffusely to allow the escape of the gametocyte: in the female it is thicker and usually gives way in a definite region near the middle of the concavity of the curve, and the gamete is gradually extruded, leaving an empty shell behind, though sometimes the polar bodies adhere to the shell. As the author says, conclusive proof that these phenomena are normal can only be furnished by a series of examinations of Anopheles after they have fed on blood containing crescents.

A. Alcock.

THOMSON (David). **The Diagnosis and Treatment of Malarial Fever.**—*Jl. Roy. Army Med. Corps.* 1917. June, July. Vols. 28, 29. Nos. 6, 1. pp. 658-685; 1-37. With 18 charts.

An able dissertation, in which the subject is critically analysed in the contributory light of 200 cases—representing all phases of the disease from many parts of the world—studied at Liverpool under conditions approximating to the strictness of experimental methods. Modern methods of diagnosis are lucidly described, all classical

systems of treatment are reviewed with judicious care, and particular attention is given to numerous subsidiary points—e.g., the course of the disease without quinine treatment or with insufficient quinine treatment, the relative values of different quinine salts, the physiological effects of large doses of quinine, the causes of relapses and of pernicious symptoms—which correct the view or influence rational treatment.

The importance of early and thorough quinine treatment is duly emphasized, 30 grains daily given in solution by the mouth for a term of three weeks, or perhaps even longer, being a curative minimum confirmed by the author's blood-examinations; but the necessity of continuing treatment to the complete disinfection stage, by destroying all the gametes, is insisted on. Quinine resistance is duly considered, though in the author's 200 cases only one such occurred—a very heavy mixed infection of benign and malignant tertian. With reference to cinchonism the author states that few or no complaints were heard in his series of cases, and that one patient voluntarily took 100 grains of quinine in one day without hurt. The author is very sensible on the subject of quinine prophylaxis, understanding its uses, as well as its limitations and abuses; he considers 15 to 20 gr. daily a reasonable dose, to be taken at bed-time when mosquitoes are getting to work and also the prospective sleeper may hope to be unconscious of its physiological effects—an argument that assumes immediate absorption of the quinine.

In discussing the cause of relapses the author thinks it unnecessary to do more than assume that owing to insufficiency of quinine treatment all the non-sexual stages of the parasites have not been destroyed. Cases occurred in the author's series, of a sudden rise of temperature accompanied perhaps by slight shiverings, where, however, the most prolonged and repeated scrutiny failed to detect parasites. Such cases he terms pseudo-relapses, since he found on investigating the hospital records and charts of 100 cases of various non-malarial diseases that similar more or less inexplicable isolated rises of temperature occurred in 17 per cent. of them.

With regard to the "pernicious" symptoms so frequently supervening in malignant tertian, the author attributes them to embolism caused by clumping of the red-blood-cells in the vessels of the internal organs where chiefly the parasites of this kind sporulate.

A. A.

ABRAMI (P.) & SÉNEVET (G.). **Recherches sur la pathogénie du paludisme à *Plasmodium falciparum*. Rôle de l'immunité. La réaction schizontolytique. Mécanisme des rechutes.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. Mar. 22. 3 Ser. Vol. 33. No. 9–10. pp. 519–534.

The proposition formulated by the authors is that in malignant tertian the two phases of the malaria parasite, schizont and crescent, are conditioned by chemico-physiological changes in the blood: that as a result of the ordinary vegetative multiplication of the parasite antibodies (lysins) appear temporarily in the blood, which the parasite parries by encystment—the crescent being a true defensive cyst: that so long as the antibodies are sufficiently concentrated the cysts

(crescents) remain quiescent and the host enjoys a state of precarious immunity—manifested by freedom from febrile attacks: and, finally, that as this temporary immunity gradually wears out, or when as a result of enervating accidents of divers kinds it suddenly breaks down, the cysts (crescents) are free to germinate and a relapse follows upon their germination. According to this theory malignant tertian malaria is to be regarded as a species of relapsing fever, comparable clinically to a spirillosis, and both clinically and biologically to amoebic dysentery.

Theories like, or something like, this and based on similar assumptions, are not exactly new, so that it is hardly necessary to recapitulate the authors' evidence as to the active existence of antibodies, or to follow their argument—which is considerably of an *ex hypothesi* complexion—that crescents are cysts. It is sufficient here to examine the evidence offered on the two crucial points (a) that the activity of the "antibodies" (or whatever it is that constitutes the temporary toleration of the parasite in the intervals between relapses) puts an end to all forms of the parasite except crescents, and (b) that the crescents proliferate in the patient.

On the first point (a) all that the authors have to say, apart from inferences from general principles, is that examination of the blood during the intervals between relapses "only reveals crescents"—which, like "what the soldier said," is not evidence positive.

On the second point (b) they state that a relapse is always preceded by a decrease in the number of crescents and by the appearance of young Plasmodia—that everything happens *as if* the latter were formed from the former in the organic depths. But, beyond this, they state that they have actually observed, in no less than 20 subjects, certain stages in the "parthenogenetic" transformation of crescents into a progeny of merozoites. This transformation, which was observed only in macrogametes, resulted in the segmentation of the nucleus into 7 chromatin masses grouped as a rosette. Particular stress is laid upon the constancy and significance of the number 7, as being exactly half the normal standard of the schizogony of this species among the issue of the ordinary sexual process. They state that this "parthenogenetic" schizogony can be observed most easily in patients whose blood contains a large number of crescents.

A. A.

GILL (Clifford A.). **The Prevention of Malaria in War, with Special Reference to the Indian Army.**—*Jl. Roy. Army Med. Corps.* 1917. Oct. Vol. 29. No. 4. pp. 439–456.

The writer gives it as his impression—an impression justified by his personal experience, if not supported by statistics—that the greater part of the sickness that occurs in the native Indian army is attributable either directly or indirectly to malaria. As regards the Punjab, at any rate, which is one great recruiting ground of the Indian army, the recruits come from a population which is widely infected every year, and in some years grossly infected. In the ranks of the army, as well as among recruits, there is a large proportion of men who seem healthy enough, yet are found, when attention is directed to the point, to have their spleen enlarged. Such cases may never come to hospital, or may

come for some complaint which, though really contingent upon chronic malaria, is not definitely attributed to malaria in hospital returns.

Arguing from these premises, which surely are not greatly questionable, the writer insists that the problem of prevention of malaria in war largely resolves itself into the prevention of malaria, in cantonments at the very least, in time of peace; so that the army may confidently take the field, especially if the conditions of the field be favourable to malaria, quite free of autogenous infection.

In addition to advocating general measures of sanitation and special measures for the prevention and discomfiture of mosquitoes, the writer particularly identifies himself with a precise method of quinine prophylaxis which he followed with much success in Muscat [see this *Bulletin*, Vol. 9, p. 67]. Every recruit and every man attending hospital should at least have his spleen examined (if examination of blood be not feasible), and the examination should not be perfunctory. The results should be entered in a Malaria Register, and the name of every man showing any indications of infection should be entered in a Quinine Register, the man himself being supplied with a corresponding card; and on this methodical plan a sustained effort should be made to eliminate individual infection by regular and inexorable administration of quinine.

As regards prevention of malaria on active service, the author considers that although in camps on lines of communication, etc., anti-mosquito measures of appropriate kinds may be hopefully applied, yet in the front line the obstructions are so manifold that the only practicable method of preventing malaria is by the regular administration of adequate doses of quinine. Since the drug is eliminated within 48 hours it must be given at intervals of not less than that. In highly endemic tracts the dose should be not less than 10 grains daily. The drug must be given in solution and under satisfactory supervision.

This is a bare summary of a thoughtful paper well worthy of perusal in its entirety.

A. A.

TRINIDAD. **Malaria Report, including Reports on: (1) Spleen Census, 1914. (2) Anopheles Survey, 1914–1915. (3) Trinidad Mosquitoes, 1915.**—C. F. LASSALLE and Assistant Sanitary Inspectors. 126 pp. **1916.** Trinidad: Printed at the Government Printing Office, Port-of-Spain.

This report, which is a record of well-planned and well-administered work, includes the systematised results of a spleen-census and of an Anopheles survey—the latter comprising nearly three-quarters of its volume—and also contains a classified list of Trinidad mosquitoes.

The spleen-census was carried out, by medical districts and sub-districts, in the month September–October: the total number of children examined for all districts collectively was 25,927, and the percentage of enlarged spleens was 14·1.

The Anopheles survey was conducted, also by district organisation, according to detailed instructions from headquarters upon the following specific points: breeding-places to be determined by systematic inspection of all waters, including water retained in holes of trees and

leaves of plants; larvae to be collected and bred for specific identification; actual breeding-places to be generally surveyed and their physical features as well as their relations to villages, etc., roads, and lines of drainage to be recorded; the same with low-lying land obviously liable to flooding; habits of adult insects and predilection for houses to be observed; possibilities of preventive measures to be estimated on the spot.

Generally speaking the breeding-places were of the usual kind—slow-running streams and rivers, pools in ravines, grassy land broken by depressions and crab-holes on the borders of mangrove swamps, rice-fields, ponds, shallow wells, borrow-pits of roads and railways, excavations for building material, blocked and ill-graded road and street drains.

A. A.

Leger (Marcel). **Le Paludisme à la Guyane Française: Index endémique des diverses localités.**—*Bull. Soc. Path. Exot.* 1917. Oct. Vol. 10. No. 8. pp. 749–756.

The author reviews the impressions and opinions recorded by earlier medical writers unfavourable to French Guiana. In his own tours of inspection he has examined the spleen and the blood of children—520 in all—in 15 communes. The spleen-index ranged from 3·6 in St. Laurent to 43 in Monsinery, and the mean of all districts was 17. The commonest infection observed was benign tertian, 68 per cent., the rarest was quartan, 3 per cent., leaving 28 per cent. of malignant tertian. On the whole the author considers that the deplorable reputation of the colony is undeserved.

A. A.

Kelly (F. L.) & Geiger (J. C.). **Endemic Index of Malaria in the Northern Sacramento Valley, California.**—*Jl. Amer. Med. Assoc.* 1917. May 5. Vol. 68. No. 18. pp. 1319–1320.

The endemic index was determined, from examination of 808 school-children and by thin blood-smears only, to be 4·7 per cent., which is said to be low in comparison with von Ezdorf's determinations in some of the southern States. The proportion of subtertian infections was high (2·2 per cent.). Only 1 quartan infection was discovered. The percentage of carriers was found to be highest between the ages of 11 and 15—double that below 11 and above 15.

A. A.

Delanoë (P.). **Contribution à l'Étude du Paludisme au Maroc Occidental. I. L'Épidémie palustre des Oulad Hassoun.**—*Bull. Soc. Path. Exot.* 1917. July. Vol. 10. No. 7. pp. 586–611. With 1 map & 1 fig.

An account in considerable detail of epidemic malaria chiefly in the hilly tracts of Western Morocco. The only *Anopheles* encountered was *maculipennis*. With the exception of a few cases (0·6%) of quartan, all the cases were benign tertian, or malignant tertian, or mixed infections of both. A remarkable feature of the epidemic was the "precocious gametogony" observed in the blood of the fresh cases of infection.

A. A.

SERGENT (Edmond) & SERGENT (Étienne). **Études épidémiologiques et prophylactiques du paludisme. Treizième et quatorzième campagnes en Algérie en 1914 et 1915.**—*Ann. Inst. Pasteur.* 1917. June. Vol. 31. No. 6. pp. 253–268. With 6 figs.

In 1914 there was a remarkable recrudescence of malarial fevers in many parts of Algeria, and in 1915 a general epidemic, recalling in violence that of the year 1904. The phenomenon is explained partly by the fact that both in 1914 and 1915 the spring and summer were wet, the spring particularly so; and partly by the interruptions of the antimalarial service consequent upon the exigencies of the War. The paper contains an interesting account of the antimalarial measures practised.

A. A.

SERGENT (Étienne). **Les enseignements d'une année d'épidémie foudroyante de paludisme dans la Mitidja (Algérie).**—*Bull. Soc. Path. Exot.* 1917. July. Vol. 10. No. 7. pp. 548–550. With 8 figs.

The author states, from 10 years' experience of a particular area, that quininisation of native human carriers of malaria, under European supervision, is efficacious; in ordinary seasons quininisation every second day, or even every four days, has good effects, but in times of epidemic it must be carried out daily.

A. A.

RAVAUT (Paul), RENIAC, DE KERDREL & KROLUNITSKY. **Le paludisme d'Orient vu à Marseille.**—*Presse Med.* 1917. Aug. 16. Vol. 25. No. 46. pp. 473–476.

In a large experience of malaria patients returned from Macedonia the authors were struck by the irregularity and disguise of the symptoms—notwithstanding that the examination of the blood revealed parasites of the recognized species—and above all by the persistence of the disease in spite of the enormous doses of quinine prescribed on their clinical charts. As regards these phenomena, particularly the last, the authors satisfied themselves by proper examination of many cases that the patients had not been taking the quinine prescribed, and then demonstrated by strict surveillance that these patients really were not resistant to quinine.

In the treatment of malaria—after trying intravenous injections of novarsenobenzol and quinine with good but not permanent results, and subcutaneous injections of atoxyl and quinine, with only moderately good results, and autohaemotherapy, which they were not entirely satisfied with—the authors decided that quinine and arsenic combined was the simplest and best method. They prefer to give the quinine by the mouth, at least 2 grams a day, with the principal meals, perhaps in wine; the arsenical preparation they finally recommend is arrhenal, a subcutaneous injection of 20 to 30 centigrams daily. They do not give both drugs every day, but two days quinine, then two days arsenic, and so on for a month to 45 days. If the patient is not "sterilised" by this course of treatment, a second shorter course must be taken. In asthenic cases adrenalin may be added.

In conclusion the authors express the opinion that the treatment of malaria in the army is as much a matter of military discipline as of medical knowledge.

A. A.

CASTELLANI (Aldo). **Notes on Tropical Diseases met with in the Balcanic and Adriatic Zones.**—*Jl. Trop. Med. & Hyg.* 1917. July 16. Vol. 20. No. 14. pp. 157–164. With 1 plate & 4 charts.

These "Notes," so far as this first instalment goes, are less notes than a methodised epitome of the Protean disguises assumed by malaria in the Balkan territories—disguises which the author's experience of tropical countries has enabled him to penetrate. The object of their publication is to impress upon such medical officers as may join the Balkan forces without similar experience, the necessity of careful examination of the spleen and repeated investigation of the blood, and the expediency of testing the effect of quinine, whatever be the type of fever and the trend of symptoms that he may be called upon to treat. Though the author appositely supplements his "Notes" from his experience in Ceylon and other tropical latitudes, his survey is designed to include just the cases that have particularly attracted his attention during the last two years while working in the Balkan area. It will be seen from the ensuing abstract that in the Balkans malaria puts on almost every puzzling mask that has ever been described, and, by comparison with text-book standards, is like Fluellen's description of Fortune, "turning, and inconstant, and mutability, and variation." The following is the list of malarial disguises and complications that have actually come under the author's notice, a wonderful record :—

(1) *Haemorrhagic malaria.*—In one instance of a severe scorbutic type suggesting an outbreak of scurvy.

(2) *Pernicious-anaemia-like malaria.*—One of these cases was treated for months as pernicious anaemia, until at length an access of high fever, and the appearance of subtertian rings (of which at first there had been no evidence) pointed to quinine and to recovery.

(3) Profound anaemia and other symptoms suggesting *cancer* ; one case in an old man ; crescents were found at last, and quinine proved efficacious.

(4) *Polyneuritis* sometimes simulating wet beriberi ; a number of cases were observed.

(5) *Malarial syndromes of the central nervous system* ; the comatose type was quite common ; the delirious type, occasionally confused with alcoholic D. T., several cases ; one case closely simulated cerebro-spinal meningitis ; cases of a purely cerebral type, suggestive of hemiplegia, monoplegia, or cerebral tumour ; one case of clinically typical transverse myelitis, and one case closely resembling disseminated sclerosis, both due to malaria ; two cases of apparent mania and one of apparent melancholia, all cured by quinine.

(6) *Malaria counterfeiting infectious specific diseases.*—Typhoid-like malaria was common, so much so that once at Gevgheli an epidemic of typhoid was reported ; but the bacterial examinations were negative and the malarial positive. One case suggestive of Malta fever did not respond to quinine by the mouth, but yielded to intramuscular injections. In one fatal case the symptoms resembled yellow fever ;

in another, haemorrhagic jaundice. A typically tetanus-like case was found to be malarial. (In Ceylon the author was called in consultation to a case of supposed hydrophobia with a history of dog-bite, which proved to be a heavy malarial infection; and in a tropical country where sleeping sickness is unknown, he followed a case of the sleeping sickness type, the blood being negative for all kinds of parasites, until at the end of six months a few malarial parasites were found, and recovery followed with quinine.)*

(7) *Malaria simulating diseases of the digestive system.*—Malarial pseudodysentery, sometimes with typical dysentery stools, sometimes merely with blood in the stools; several such cases were seen, and the author alludes to a case in Ceylon which had been treated for dysentery until an examination of the spleen indicated the true nature of the disease and instigated successful treatment. Malarial pseudocholera was once seen in the Balkans, but not such a typically and severely choleraic case as once occurred in Colombo, during a cholera epidemic, when the author as consultant was able to demonstrate rings and to effect a cure with quinine. Of a cholocystitis syndrome three cases were observed. Cirrhosis of liver, with ascites and dropsy of feet; one case occurred where malarial parasites were at length found and quinine treatment slowly brought about a cure. Acute haemorrhagic pancreatis; one case diagnosed as such by the physician in attendance and proposed for operation was found to be malarial and was soon cured with quinine. Pseudoappendicitis; several cases came to the author's notice, one of them had actually been operated upon by a surgeon before the malarial parasites were detected. Pseudoperito nitis; one case reported as peritonitis was found by the author to be malarial, and was cured in a few days by quinine. (The author also notes a case that came before him in consultation, in Ceylon, where a supposed hepatic abscess was found to be subtertian malaria; but he warns the inexperienced practitioner that the converse error of mistaking hepatic abscess for malaria is more frequent.)

(8) Malarial complications of the *respiratory system.*—Dry bronchitis and dry pleurisy of malarial origin have been observed in the Balkans.

(9) *Cardiac and vascular complications.*—The author has observed cases of angina pectoris syndrome, peripheral arteritis and gangrene, intermittent claudication, erythromelalgia, and acroparesthesia, as well as palpitation, tachycardia, arrhythmia, and heart-block, all due to malaria.

(10) *Reproductive system.*—A case of orchitis and a case of priapism have been observed, both due to malarial parasites and cured by quinine.

(11) *Skin diseases.*—In the author's experience of malaria herpes, urticaria, erythema of various kinds including scarlatina-like erythema followed by desquamation in large flakes, oedema suggesting Calabar swellings, and even a shotty papular eruption that had been suspected to be small-pox are all mentioned.

The principles of the therapeutic and preventive treatment of malaria are broadly considered.

A. A.

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*For a similar case consult *Sleeping Sickness Bulletin*, Vol. 1, p. 429 [Ed.]

Armand-Delille (P.). **Remarques sur les aspects parasitologiques du Paludisme contracté en Macedoine.**—*C. R. Acad. Sci.* 1917. July 30. Vol. 165. No. 5. pp. 202–203.

The author is impressed by the facts that among the French troops in Macedonia the predominant malarial infection between the beginning of July and the end of March following was *P. falciparum*, and the predominant infection from April onwards to July was *P. vivax*. In October 95 per cent. of all cases of malaria were *P. falciparum*: after April 115 out of 116 blood examinations showed only *P. vivax*. Again, at the hospital for malaria patients at Vichy, at the end of June and beginning of July he could find only *P. vivax*. Further: Dr. Wurtz, in charge of a hospital for returned army malaria patients in Paris, found that after the month of December *P. vivax* was completely "substituted" for *P. falciparum*; even in patients who had had pernicious malaria he could then find only parasites of benign tertian.

How is it, the author asks, that the parasite usually so resistant to quinine disappears in the spring, giving place then to the parasite usually so sensitive to quinine? Is there a transformation of *P. falciparum* into *P. vivax*? Is *P. falciparum* merely the form that persists in the internal organs? Is Laveran's theory of the unity of malaria parasites correct?

A. A.

Lamoureux (A.). **Le paludisme autochtone de la région du Lac Presba (Albanie du sud).**—*Bull. Soc. Path. Exot.* 1917. Oct. Vol. 10. No. 8. pp. 707–710.

A brief account of an uncompleted malaria-survey of nine villages near the south-western shores of L. Presba in Albania. The survey was started on the 10th April and came to a premature end on the 2nd August. In addition to spleen-examinations made on the spot, examinations of blood were made in the laboratory at Salonica. The endemic index was low. Anopheles were found in all the villages, even in a village 3,000 metres distant from any breeding-place, but were not numerous. Larvae of Anopheles appeared in April in the village ponds; in June and July they were very abundant in the pools and lagoons of the shores of the lake, but they were never found in the lake itself. The only malaria parasite discovered was that of benign tertian.

A. A.

Werner (H.). **Die Malaria im Osten und ihre Beeinflussung durch die Besonderheiten des Krieges nebst Bemerkungen über Anophelenbiologie und Malariatherapie.** [Malaria on the Eastern Front as influenced by the Special Conditions of the War, with Remarks on Anopheles and on Treatment.]—*Münch. Med. Woch.* 1917. Oct. 15. Vol. 64. No. 42. pp. 1375–1377. With 3 charts.

The "text" of this paper is a chart of the incidence of malaria in a corps on the Eastern front [locality not given] in the summer of 1916. It shows that malaria was present at the beginning of March, mained at the same, low, level till the middle of April, then increased

till the end of the first week of June, and diminished till the first week in July, when the curve rose abruptly to 2½ times its former height in the first week of August, dropping six weeks later and reaching its original level the last week in September. There was thus a small wave followed by a large wave. The peculiarity of the situation lay in the facts that the civil population had been all removed and that the soldiers introduced were originally free, or practically free, from malaria. The first wave is attributed by the author to infected Anopheles that had survived the winter. The curve of occurrence of Anopheles—they were first seen at the end of April and became numerous at the beginning of July—was found to correspond approximately to the second wave, but some three weeks removed, Whence did the new mosquitoes derive their infection? He discusses as possible sources the civil population, infected soldiers of the first wave, soldiers with an infection acquired elsewhere, captured Russians and deserters and the opposed Russian front, and rejects them all for reasons given. The survival of the hibernated mosquitoes is considered, but in that case one would expect a uniform curve gradually dying away. The only possibility left, apart from prolonged incubation in the troops, is inheritance of the malarial infection in the mosquito. The analogies for such an inheritance in an insect are mentioned. It is admitted that morphological proofs are wanting, but the author thinks that his observation favours this hypothesis.

The observations on the bionomics of Anopheles were that they have a special predilection for latrines [see this *Bulletin*, Vol. 9, p. 367] and that they can withstand a great degree of cold. Anopheles which had suffered for a week a temperature of 10° to 25° C. revived a few hours after being brought into room temperature and flew about. The author suggests that these are the mosquitoes which survive the winter, and those that take refuge in living-rooms succumb.

As to treatment, some 15 per cent. of the cases (tertian) relapsed, which the author attributes to quinine fastness, described by him in 1910.

A. G. B.

Kirschbaum. **Zur Epidemiologie der Malaria.**—*Münch. Med. Woch.* 1917. Oct. 23. Vol. 64. No. 43. pp. 1405–1408. With 5 charts.

Relates to an epidemic of benign tertian among German troops "in the ice and snow of north-western Russia," in 1916. Beginning with a few cases in February and March, it rose rapidly in April, culminated in May, and sank less rapidly through June, July and August. But the expected revival in August-September did not occur, a deviation from normal experience that may possibly, the author concludes, be attributed to the inclement weather being unfavourable to the development of malaria parasites in the local mosquitoes and possibly adverse to the insects themselves: since the temperature-curve from March to October remained above 15° C. only in July. From the distribution in the regiments and from the apparent infrequency of malaria among the local peasantry the author considers that the cases were relapses from (? delayed manifestations of) infections of the previous summer, and were not immediate infections from wintering mosquitoes. He has therefore to assume that

the disease remained latent for 6 to 11 months though the troops were doing hard work under exposure, and he suggests that the extreme cold of the winter retarded the activity of the parasites.

A. G. B.

Appel (Leo). **Ueber die Ursachen der Malariarückfälle.** [The Causes of Relapses in Malaria.]—*Wien. Klin. Woch.* 1917. July 19. Vol. 30. No. 29. pp. 910–912. With 2 charts.

The author writing from a "malaria laboratory" at Sarajevo has noticed that in chronic malaria relapses occur on particular days which have no relation to the developmental cycle of the parasites. On certain days, and often at the same hour, a whole concourse of relapses occur, and then for some days among hundreds of patients only two or three have fever; and the examination of the blood corresponds. It is as if the parasites of all the patients were connected by an invisible tie, so that at some definite impulse all the dormant "gametocytes" were incited to proliferate. The phenomenon is not to be explained by the "natural selection theory" that relapses naturally occur at the season when Anopheles swarm, nor by the theory of the general quickening of all life in spring, nor by the influence of mean temperature and duration of sunshine. The true (*zwar*) explanation is the influence of a disturbed barometer—the greater the disturbance of the atmospheric pressure the more frequent are the relapses. In support of the theory the barometer-curve and the curve of malaria relapses at Sarajevo for a definite term (20th Dec. 1916 to 31st Jan. 1917) are compared—sudden falls of the barometer and records of relapses generally synchronize. Other miscellaneous observations are brought into line with this theory, among them the subsidence of malaria at high elevations, where fluctuations of the barometer are diminished. This theory of scientific causation would hardly satisfy a logician; fluctuation of atmospheric pressure covers a plurality of causes; the fact that the world is a habitable world and not a howling wilderness may be said to be due to fluctuations of atmospheric pressure.

A. A.

Biswas (S. C.). **A Case of Malaria acquired in England.**—*Lancet.* 1917. Sept. 8. p. 388. With 1 chart.

A concise account of a typical case of benign tertian acquired in the Isle of Sheppey, in which the evidence quite fairly justifies the conclusion that the infection was imparted by the local Anopheles, which in turn were infected from a case, or cases, of malaria imported from abroad.

The obvious moral is that returned malaria convalescents from the Expeditionary Forces should be excluded very carefully from the Isle of Sheppey and other places where *Anopheles maculipennis* is plentiful and is known to frequent houses.

A. A.

Firth (A. C. D.). **Malaria acquired in England.**—*Lancet.* 1917. Aug. 4. p. 162. With 1 chart.

A case of benign tertian. The patient, age 20, had never been out of England, and was in good health until, after joining the army, he reached a depot where men returned from Salonika are drafted; among these returned men cases of malaria often occur.

A. A.

i. Wilcox (R. Loy). **Another Case of Malaria contracted in England.**—*Lancet.* 1917. Oct. 6. p. 536.

ii. Newham (H. B.). **Malaria contracted in England.** [Correspondence.]—*Ibid.* Oct. 13. p. 581.

iii. Osler (William). **Home-Bred Malaria.** [Correspondence.]—*Ibid.* Oct. 20. p. 621.

iv. Wilcox (R. Loy). **Another Case of Malaria contracted in England.** [Correspondence.]—*Ibid.* p. 621.

i. The antecedents recorded in this case are that the patient, who had been in England over three months at the moment of the attack, had come from Salonica after being operated upon for a wound there. On this record, and in the absence of any other particulars, it seems unnecessary to assume that the malarial infection was acquired in England.

ii. The writer considers that there is no evidence to justify the opinion that the infection was contracted in England and that a more probable assumption is that it originated in Salonica.

iii. Sir William Osler recommends circumspection in reporting cases of supposed home-bred malaria, and equanimity in dealing with the whole question of imported malaria.

iv. With reference to his previous article the writer states that there was no history of an antecedent attack of malaria and appears to think that settles the case as one of home-bred malaria.

A. A.

Roubaud (E.). **Nouveau cas de paludisme contracté sur le front français.**—*Bull. Soc. Path. Exot.* 1917. Oct. Vol. 10. No. 8. p. 706.

A trooper hospitalised in Paris for febrile gastritis was found to be carrying a heavy infection (schizonts) of benign tertian. Beyond having been employed in marshy tracts during the year 1915–1916 when he was stationed in the Champagne district, there was no antecedent history of exposure to conditions suggestive of malaria.

A. A.

Apicella (Gaetano). **Sul problema della malaria nell' Esercito.** [The Problem of Malaria in the Army.]—*Policlinico.* Sez. Prat. 1917. Sept. 30. Vol. 24. No. 40. pp. 1216–1217.

The problem of dealing with soldiers who are the subjects of malaria is a pressing one for the Italian army. The author pleads for the establishment of special labour-corps for work at the higher altitudes

on the frontier, composed exclusively of malaria-convalescents, and having a proper equipment of surgeons with hospital accommodation at hand. Furlough is nothing but a waste of time for these men as they go back for the most part to malarious districts.

J. B. Nias.

Hoffman (Frederick L.). **Malaria as a Factor in Military Efficiency.** —*Southern Med. Jl.* 1917. Aug. Vol. 10. No. 8. pp. 676–678.

The author draws attention not only to the danger of malaria to armies but also to the danger of malaria from armies, and expresses very sound opinions upon the importance of medical entomology, and upon the value of medical entomologists to the Army Medical Service. His opinions on this point cannot be too strongly endorsed or too widely promulgated.

A. A.

Monier-Vinard & Caillé. **La tension artérielle dans le paludisme fébrile.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. Mar. 22. 3 Ser. Vol. 33. No. 9–10. pp. 449–454. With 1 chart.

In all their malarial fever cases (78 in number) the authors have observed a very notable diminution of arterial tension, as determined by Pachon's apparatus. They have also observed the following variations in arterial tension in the course of the disease :—(a) during the paroxysm, a rise of maximal tension from the shivering stage until the sweating stage, and a lowering of minimal tension throughout ; (b) in the intervals of benign tertian, weak maximal tension and a continuation of lowered minimal tension ; (c) in the intervals between relapses both maximal and minimal tensions gradually recover, but exhibit variations of a tertian type independent of any rise of temperature.

In the subsequent discussion one of the questions mooted was whether perhaps this diminished arterial tension in army cases of malaria might not be attributable, or partly so, to fatigue and depression.

A. A.

Carnot (Paul) & Bruyère. **Présentation de cinq cas de mammite paludique.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. June 14. 3 Ser. Vol. 33. No. 19–20. pp. 727–730. With 1 fig.

Five cases of malarial mastitis in men between 25 and 35 years of age, originally infected in Salonica, the mastitis coming on in one case three months, in another case six months, and in two other cases nine months after the first malarial attack. In four cases both mammae were affected, and in three cases colostrum could be expressed from the swollen and tender glands. In every case the inflammatory swelling began at the moment of a paroxysm, increased at each successive relapse, and was long persistent. Independent of the periodic rises of temperature due to malaria there was no general febrile reaction, and the only other notable symptom was swelling and tenderness of the axillary glands.

The diagnosis was confirmed by examination of the blood: in two cases *P. vivax* was found, in the other three cases the exact species is not recorded.

A. A.

Paisseau & Lemaire. **Deux cas de gangrène des membres d'origine palustre.** — *Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. Feb. 22. 3 Ser. Vol. 33. No. 5–6. pp. 219–235.

An account of two cases of malarial endarteritis affecting not only the smaller visceral vessels where it provoked thrombosis and haemorrhagic infarctation, but also the posterior tibials where it resulted in gangrene of the feet. Both cases were admitted in a very grave condition and showed intense infection with *P. falciparum*: both were young men—30 and 36 years respectively. In one case haemoglobinuria was a complication. The authors give abstracts of both cases and a very full report of the post-mortem examinations.

A. A.

Paisseau (G.) & Lemaire (H.). **L'anémie dans le paludisme primaire.** —*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. June 14. 3 Ser. Vol. 33. No. 19–20. pp. 745–747.

An elaborate terminology of phases of anaemia that occur in recent malarial infections. All, however, according to the author, are essentially amenable to quinine, with adjuvant "haematopoetic medication": though others may prefer arseno-benzol to quinine.

A. A.

Craig (C. B.). **Disseminated Sclerosis occurring in Chronic Malaria.**— *Jl. Nerv. & Ment. Dis.* 1917. Vol. 45. pp. 350–353.

This case of disseminated sclerosis is attributed to malaria on the evidence of an enlarged spleen, a long antecedent history of malarial attacks recurring every autumn for six years and then ceasing entirely, and present occasional temperature-reaction to quinine: there was no genuine anaemia though the patient's complexion was yellowish, and malaria parasites could not be found in the blood.

In the discussion Dr. W. M. Krauss referred to a case of profound anaemia and emaciation suggestive of carcinoma, in which there was a definite series of symptoms pointing to the central nervous system—double Babinski, increased knee-jerks, ataxic tremor of both arms, absent abdominal reflexes, and nystagmus: the spleen was enlarged and enormous numbers of malaria-parasites were found in the blood: under quinine treatment the parasites and all the neurological symptoms disappeared and the anaemia was very much improved.

A. A.

Majoli (Alberto) & Paoletti (Fernando). **Sopra un caso di perniciosa malarica a sindrome tetanica.** [A Case of Pernicious Malarial Fever with Tetanic Symptoms.]—*Policlinico.* Sez. Prat. 1917. Oct. 14. Vol. 24. No. 42. pp. 1269–1270. With 1 chart.

A soldier under treatment for malarial fever developed trismus and other symptoms of a tetanic nature. The blood contained at the time asexual parasites with a certain number of crescents. No history of an injury or other possibility of infection with tetanus could be obtained. Six cc. of the patient's blood were drawn off and injected in equal proportions into three guinea-pigs, but none of the animals showed signs of tetanus. An endovenous injection of 1½ grammes of quinine was at once given, but the tetanic symptoms persisted and increased, with the result that the patient died in convulsions about 24 hours after their commencement, with a temperature of 41°. In the absence of any history of a possible tetanus infection, the authors ascribe the symptoms to malaria.

J. B. N.

de Brun (H.). **L'érythème paludéen.**—*Paris Med.* 1917. Aug. 11. Vol. 7. No. 32. pp. 129–131.

Methodical examination of 160 cases permits the author to affirm that malaria is an exanthema, characterized by an erythema of variable extent and intensity. The rash may appear in any form of the disease light or grave: its nature and variations are described in some detail.

A. A.

Richardson (Charles W.). **Malaria simulating Diseases of the Mastoid and Frontal Sinus.**—*Ann. Otol. Rhinol. & Laryngol.* 1916. Sept. Vol. 25. No. 3, pp. 602–606.

A precise and sufficiently full account of two cases one of which simulated mastoiditis, the other disease of the frontal sinus.

In the first case the symptoms, as well as the antecedent history of acute suppurative otitis with rupture of the membrana tympani, were strongly suggestive of suppuration in the mastoid with intracranial complications. Examination of the blood revealed malaria parasites, and the patient was treated satisfactorily with quinine, the temperature falling to normal in a few days. The patient returned to hospital some weeks later for eye troubles (optic papillitis), which had been present from the first but had not improved altogether.

In the second case the subjective symptoms strongly suggested disease of the frontal sinus, but the naso-pharynx was found to be quite normal. When the blood was examined scarcely one cell was free of parasites. Under quinine the frontal pains disappeared and the number of parasites was much diminished.

A. A.

Cason (T. Z.) & Birge (E. G.). **Pernicious Malaria: a Report of a Case.**—*Jl. Amer. Med. Assoc.* 1917. May 19. Vol. 68. No. 20. p. 1475. With 1 chart.

Patient, a white man, age 33, was admitted comatose, with abdomen tympanitic. He had been taken ill about three months before and had

had occasional headaches since. There was anaemia, some oedema, and slight enlargement and tenderness of the spleen. The day after admission the temperature was subnormal. There was no history of chills, but the patient had taken much quinine during the past few years. The blood was examined on five occasions during the six days following admission, and for some time suggested a condition of pernicious anaemia, but finally, after a slight rise of temperature, numerous rings were found. As soon as the diagnosis was established quinine was given, with a rapidly favourable result.

A. A.

Pissavy (A.) & Quiquandon (J.). **État léthargique consécutif à un accès paludéen.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. May 31. 3 Ser. Vol. 33. No. 17–18. pp. 717–719.

The patient, age 22, had enjoyed good health without any nervous abnormalities, until he contracted malarial fever in Macedonia. After his return to France he had slight and distant relapses of fever. Being admitted to hospital for a trivial affection of the nasopharynx, more than five months after his return, he had a typical malarial paroxysm, with a temperature rising to 106·8° Fahr., delirium and convulsions, ending in a prolonged critical sleep. During the sleep the patient was insensible to all stimuli, except that he swallowed liquids introduced into the mouth and passed water when the urinal was placed in contact; and the temperature fell to 100° F.

When seen by the authors on the third day he was in a state of lethargy, with the eyes firmly shut and the skin absolutely anaesthetic; but he responded by appropriate passive movements to certain orders —and subsequently, on recovery, he stated that he had heard all that was going on. In this hysteric condition he remained for a week, after which he began to answer in monosyllables and gradually regained sensibility; but it was not until the 31st day that he recovered his normal state entirely.

The patient was extremely intelligent, but though he admitted having once attended an exhibition of hypnotism he had no knowledge of Babinski phenomena.

A. A.

Histrowitz (H.). **Zur Klinik des Tertianfiebers.**—*Deut. Med. Woch.* 1917. Oct. 25. Vol. 43. No. 43. pp. 1356–1359. With 6 charts.

Six cases of verified benign tertian illustrating difficulties of diagnosis not altogether novel. In one case there were neither symptoms, except splenic tumour, nor manifest parasites, until some days after the patient received an anti-typhoid vaccination. In another the conspicuous symptoms, after initial fever and diarrhoea, were retention and persistent dysuria. A third simulated typhoid. In another, which proved to be a double tertian, the early diagnosis hesitated between appendicitis, cholecystitis, and liver abscess. A fifth, where fever was accompanied with pain and swelling of the dorsum of the feet, was thought to be a subacute polyarthritis that had kindled latent malaria. Conversely in a case of obvious tertian,

which, though treated with quinine, passed into a typhoid state and ended fatally after a month, malaria was believed to have revived an ulcerative endocarditis revealed at the post-mortem.

A. G. B.

JEANSELME (E.). **Sur une forme de tremblement liée à l'infection paludéenne. (Présentation d'un malade.)**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. Apr. 5. 3 Ser. Vol. 33. No. 11–12. pp. 557–559.

The tremors are not exhibited by the patient when he lies supine with all the muscles relaxed; but if the head then be raised on a pillow it oscillates and jerks, and there is nystagmus and rhythmical blinking; and if the patient is placed in a sitting posture, with the legs dangling, the whole body is agitated by tremors. There are no other symptoms. According to the patient the condition has lasted 16 or 18 days, and is a survival of the shivering stage of a malarial paroxysm. There is a definite history of recent and still existent malarial infection. The patient had a chancre six years ago, but was properly treated by modern methods and afterwards showed a negative Wassermann. At present his Wassermann reaction is positive [possibly, it may be surmised, due to malarial infection].

A. A.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS. 1917. Sept. Vol. 29. No. 3. pp. 354–356. **Provisional Instructions for the Treatment of Cases of Malaria in the United Kingdom.**

Revised instructions for the treatment of malaria based upon experience accumulated in special malaria wards in England. This digested experience confirms the general efficacy of quinine in daily quantities of 20 to 30 grains for subduing fever and reducing non-sexual parasites, and of quinine combined with arsenic and iron for relieving anaemia in chronic cases, and the general inefficacy of quinine, however administered (as well as of any of more than 20 other kinds of treatment tried) for the permanent eradication of malarial infection.

No noteworthy difference has been established between any of the customary methods of giving quinine; but in large doses acid solution of the sulphate seems perhaps to be less agreeable to the stomach than the hydrochloride, and generally large quantities of quinine are better borne when given partly by intramuscular injection and partly by the mouth, or if distributed through the day in small doses.

In the opinion of many of the specially-qualified medical officers anaemic and debilitated cases treated continuously as in-patients have not done so well as when treated as out-patients on full or light duty.

As regards the prevention of relapses, men taking 5 grains of quinine daily have relapsed to the extent of 30 per cent., but men taking 10 grains faily, or taking 20 grains in two several days of every week, have shown a much smaller percentage of relapses, and men taking 30 grains daily and doing full duty in camp have not relapsed or suffered inconvenience; perhaps the optimum dosage is 60 grains weekly, and it seems not to be material whether this amount be given in large doses on two or three several days of the week or in smaller doses every day

A. A.

Dunley-Owen (A.). **Treatment of Malaria.**—*S. African Med. Rec.* 1917. Sept. 22. Vol. 15. No. 18. pp. 279–280.

Nothing very novel, except that special subsidiary treatment is advocated for the myocarditis which, in the author's experience, is common in subtertian cases. Since 1908 the author has habitually used atoxyl or soamin in the treatment of subtertian and malignant tertian. In Rhodesia some years ago he gave intravenous injections of tartar emetic a fair trial, but "without any beneficial result." In Rhodesia also he noticed that people who were accustomed during the wet season to take regularly a nocturnal dose of 5 grains of quinine were not immune against or even resistant to malaria.

A. A.

Marchoux (E.). **Le paludisme de Salonique. Traitement.**—*Bull. Acad. Med.* 1917. Aug. 7. 3 Ser. Vol. 78. Year 81. No. 31. pp. 112–114.

The author, merely stating his conclusions in this paper, thinks that too much importance has been attributed to subcutaneous and intravenous injections of highly soluble salts of quinine, and that oral administration of the more slowly absorbed forms, such as quinine alkaloid and basic quinine, is preferable. The sexual phases of the parasite are resistant to quinine, but cannot therefore be regarded as cysts: "after 14 days, on an average, they divide like an ordinary schizont, by a sort of parthenogenesis," hence recovery from an attack of fever is followed by a relapse in 14 days; or "if the parthenogenetic generation be scanty the relapse fails and the apyretic interval continues for a month." By administration of quinine two or three days before the expected relapse—the exact time to be determined by daily examination of the blood—the patient can be sterilized. The daily administration of quinine is inconvenient, wasteful, and useless; 3 one-gramme doses a week are sufficient to catch all the new generations of the parasite.

A. A.

Abrami (P.). **Le paludisme primaire en Macédoine et son traitement.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. Mar. 22. 3 Ser. Vol. 33. No. 9–10. pp. 500–519.

The author's practical conclusions, which have already been summarised in the *Bulletin* [Vol. 10, p. 161], are that Macedonian malaria is comparable with the severe tropical forms of the disease; that recent infections can be cured in 66 per cent. of cases if treated at once, before the formation of crescents, by daily administration of 3 grammes of quinine—preferably the hydrochlorate, by subcutaneous injection, in combination with urethane and adrenaline: that chronic infections should be treated like recent infections during the actual relapses only, and that after a relapse the treatment should be absolute rest, nourishing diet, and administration of arsenic and iron, the patient being isolated, kept under a mosquito net, and sent away to a healthy climate as soon as possible.

A. A.

James (S. P.). **The Intravenous Administration of Quinine Bihydrochloride in Malaria, and a Remark upon the Form of the Parasite responsible for True Relapses (War Office Investigations).**—*Jl. Roy. Army Med. Corps.* 1917. Sept. Vol. 29. No. 3. pp. 317–322.

The object of the investigation recorded in this paper was to ascertain whether the intravenous method is more preclusive of relapses than other methods of administering quinine. The cases selected for experiment were obstinate relapses in spite of potent quinine-treatment by mouth or by intramuscular injection, all of them being pure benign tertian, except one, where there was an entry of subtertian parasites in the annals.

The methods of investigation are described and the results are tabulated. The results, *inter alia*, confirm the established proposition (J. D. Thomson) that a single intravenous injection of 15 grains of quinine bihydrochloride at the time of a rigor is soon followed by abatement of fever, and by the disappearance of all the non-sexual forms of the parasite from the peripheral blood (without appreciable diminution of the sexual forms) provided that only one generation of parasites is present: where 2 or more progenies are present the same dose must be repeated in accordance with the circumstances. They show also that there is a class of cases where this dose even when repeated daily for ten days does not prevent relapses.

In these repeatedly-relapsing cases the infection is observed to be particularly heavy, and among the large number of gametocytes present are said to be some forms of indefinable sex. The author thinks it a plausible working hypothesis that these assumed indeterminates may be the dormant, or persistent, quinine-resisting forms of the parasites; since in cases of true relapse the same doubtful forms are those earliest found in the peripheral blood, and in cases that relapse during or very soon after energetic quinine treatment somewhat similar forms may be observed in films of spleen blood.

A. A.

Teichmann (Friedrich). **Klinische und experimentelle Studien über die Chiningewöhnung des menschlichen Körpers und die scheinbare Chininfestigkeit der Malariaplasmodien.** [Clinical and Experimental Studies on Quinine Habituation and Apparent Quinine-Fastness of Malarial Plasmodia.]—*Deut. Med. Woch.* 1917. Aug. 30. Vol. 43. No. 35. pp. 1092–1096.

The author, who writes from a German military hospital in Turkey, has experienced like others the failure of quinine as a prophylactic for malaria and the recalcitrance of many cases to treatment extending even over months, both of the benign and subtertian varieties. He has found that patients who had not taken quinine responded readily to treatment and remained free from parasites for at least 5–6 weeks, whereas in those who had taken quinine regularly parasites appeared as soon as the quinine was left off or even persisted during its administration. In 24 cases of the last group, treated for 4 or 5 months for tropical malaria, benign tertian parasites appeared at the end of the time, though recent infection was out of the question. He cites the usual explanations—inefficient prophylaxis, quinine-fast

parasites, low resistance of the patients, insufficient treatment—and rejects them as unsatisfactory, but notes that many patients suffered from enteritis and dysentery so that the quinine was incompletely absorbed. He has followed Nocht's method of quinine administration, i.e., fractional doses by mouth, 1-1·5 or even 2 gm. daily, continued for 8 days after the fall of temperature, and after treatment with like doses at increasing intervals; intravenous injection also was often used.

The author believed the cause of the failure to lie in the giving of quinine over long periods first for prophylaxis and then in treatment. which must lead to quinine habituation of the body and a reduction and even disappearance of its specific action. Certain cell groups and organs under the continual toxic stimulus of this, as of other, plant alkaloids are enabled to fix continually increasing quanitites, so that less and less is available in the circulation. Authors are agreed that about 40 per cent. of the drug can be recovered from the urine, the rest being destroyed; this 40 per cent must be the active portion, and from the quantity excreted one may conclude how much was available in the blood.

To test his hypothesis the author examined the blood and urine of a "large number" of patients. Quinine was given intravenously and at definite intervals blood was withdrawn from a vein and after treatment with soda and ether tested with Giemsa's reagent, which yields a yellow coloration or a cloud according to the quantity of the alkaloid; the urine was similarly tested. It was sought to find whether quinine habitués and non-quinine habitués gave different results. Examples are given and the following conclusions are reached. (1) Whereas in the blood of non-quinine habitués considerable quantities of quinine may be found, in the blood of quinine habitués after a definite interval it is not demonstrable or only in very small quantities. (2) In the second class surprisingly little quinine is excreted in the urine; excretion begins later and ends much earlier than in the first class. (3) Continuous investigation of the same case under quinine treatment shows that excretion gets less day by day and in some instances eventually reaches zero. (4) By gradually increasing the dose in the course of treatment one can keep the excretion at approximately the same level.

For quinine to exert its specific action a certain concentration in the blood is necessary, but in quinine habitués smaller and smaller quantities of quinine are there. The quinine fastness of the parasites is only apparent; they are still sensitive, but the quinine at disposal is insufficient to kill them. It remained to test these conclusions by gradually raising the dose of quinine; at the same time lessening the quinine habituation by leaving off the drug for suitable intervals. Patients were therefore treated thus:—Two-four weeks, according to the degree of quinine habituation, no quinine; ten days quinine, 3 days 1·2 gm., 3 days 1·5 gm., 4 days 1·8 gm.; 8 days pause; ten days quinine treatment as above; 10-12 days pause; ten days treatment; lastly, 1·2 gm. of quinine on two successive days in each week for 6 weeks. It is stated that this method has been completely successful in obstinate cases. The malarial parasites disappeared; the general condition improved; the haemoglobin percentage reached the normal; and in an observation period up to 6 weeks there were

no relapses. The author does not assume that they are definitively cured but thinks that by the early application of the method to quinine habitués a large number may recover. To the objection that it is dangerous to leave these patients without quinine he replies that such relapses as occur are mild and that the preliminary long cessation is applied only to chronic cases with parasites always in the blood; the patients are, he finds, none the worse, and some improve, and it is always possible to cut short an attack by neosalvarsan or methylene blue.

In conclusion he says that he is not against prophylactic quinine; on the contrary he urges its systematic and careful use, but believes that if malaria breaks out in such cases it should be treated with intermittent quinine in rising doses.

A. G. B.

Rogers (Leonard). **An Experimental Investigation of the Suitability of the More Soluble Salts of Quinine and Cinchonine for Intravenous Injection.**—*Brit. Med. Jl.* 1917. Sept. 22. pp. 381–384.

The author tabulates some experiments made with several salts of quinine and cinchona alkaloids to determine their relative effect upon human blood-serum, and their relative toxicity to *Paramoecium* and on the other hand to rabbits and pigeons. His conclusions are that quinine lactate and periodide and hydroquinine hydrochloride are unsafe, as even in dilute solution (1 in 100) they cause a precipitate in serum (the two first also being manifestly more toxic to pigeons), and that, on the whole, the most suitable salts for intravenous injection are the acid hydrobromide and the bihydrochloride of quinine.

The author states that his clinical experience with intravenous injections of these two salts in malaria cases has been limited, but that, so far, with half-gram doses daily for three or four days, the effect upon the fever and upon the parasites has not been more marked than with administration by the mouth.

In confirmed cases of relapse the author's own experience is that the daily administration of 10 grains of quinine, in either one or two doses, for not less than three and preferably for six months is the most satisfactory treatment; but no particulars of cases are given.

A. A.

Wurmfeld (Armin). **Ueber Optochin-Behandlung der Malaria.**—*Wien. Klin. Woch.* 1917. June 21. Vol. 30. No. 25. pp. 783–784.

The author working in a large hospital for malarial patients was dissatisfied at the end of the malarial season with quinine, whether given by mouth or by the veins—he had many cases of thrombosis and infiltration. He therefore tried optochin, or aethylhydrocuprein, on 26 cases, which were under observation for two months, with results that he regards as extremely good. All were severe cases which either had resisted treatment for months and still had febrile attacks or were obstinate parasite carriers. One gramme of the hydrochloride was given daily for two or for three days in five 4-hourly doses, after which all treatment was suspended. The cases of benign tertian so treated

almost without exception lost their parasites promptly, were free two months later, and improved very much in their general state. In the case of tropical malaria only three out of seven cases responded in like manner, higher doses notwithstanding: but the author says that the later attacks were weaker and more spaced. He was on the look-out for disturbances of vision and questioned the patients frequently for subjective signs. The trials are to be continued. [See also this *Bulletin*, Vol. 3, p. 435; Vol. 5, p. 50; Vol. 6, p. 334; and Vol. 9, p. 305.]

A. G. B.

Sinton (J. A.). **Quinine Idiosyncracy in Five Cases.**—*Indian Med. Gaz.* 1917. Sept. Vol. 52. No. 9. pp. 323–324.

A European after 40 grains of quinine acid hydrochloride taken in the course of two days had "marked oedema of the face and eyelids." Three Indians after doses of 10, 5, and 5 grains of quinine sulphate had an urticarial rash all over the body and in two of them there was severe vomiting and diarrhoea. In the fifth case, a Jat, there was a history of semi-coma after quinine. He received cinchonidine sulphate, 5 grs. in solution.

"After fifteen minutes he was carried back to hospital in a collapsed condition. He was semi-comatose, his face and conjunctivae were very congested, his pupils dilated, and his eyes turned up. His skin was cold and clammy, his pulse imperceptible at the wrist but heart-beats 80, and his temperature 95° F. Vomiting and diarrhoea were severe. An ounce of brandy was given and hot bottles applied. After about twenty minutes he became conscious and complained of chilliness and severe headache. In a few hours' time an urticarial rash appeared on the body. His urine contained no albumen or blood. On the next day he had recovered except for headache and buzzing in the ears which lasted several days."

For a similar case see this *Bulletin*, Vol. 2, p. 152. McGilchrist found cinchonidine the least lethal of the cinchona alkaloids.

A. G. B.

Ravaut (Paul) & de Kerdrel (A.). **Essai sur le traitement mixte du paludisme par les cures arsénico-quiniques.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. Mar. 22. 3 Ser. Vol. 33. No. 9–10. pp. 468–473.

An exposition, illustrated with abstracts of cases, of the immediate good effects of the mixed arsenico-quinine treatment of obstinate forms of malaria. The authors have also used this treatment in cases of haematuria of malarial origin, giving the quinine by the mouth, as they have observed in such cases that the intravenous injection of quinine increases the albumen in the urine.

A. A.

Bittorf. **Die kombinierte Salvarsan-Chininbehandlung der Malariarezidive.** [Salvarsan and Quinine in Malarial Relapses.]—*Münch. Med. Woch.* 1917. Sept. 11. Vol. 64. No. 37. pp. 1216–1217. With 4 charts.

The author is attached to a military hospital at Leipzig. His method of treatment is as follows:—At the height of the first relapse

he gives 0·45–0·6 gm. neosalvarsan; this is followed by a course of Nocht's quinine treatment during which 2–5 times at 14 day intervals salvarsan injections are given, 0·3–0·6 gm., chiefly on quinine free days. Many severe cases of anaemia and cachexia improved surprisingly quickly. No difference between tropical and tertian malaria in this respect was noticed. Neosalvarsan was observed to provoke a relapse; the drug is indeed recommended for this purpose.

A. G. B.

Neuschlosz (S.). i. **Ueber die kombinierte Neosalvarsan-Chinintherapie bei tropischer Malaria und ihre pharmakodynamischen Grundlagen.** [The Combined Neosalvarsan-Quinine Treatment of Tropical Malaria and its Pharmacodynamic Foundation.]—*Münch. Med. Woch.* 1917. Sept. 11. Vol. 64. No. 37. pp. 1217–1219. With 3 charts.

ii. **Erfahrungen über die Kombination des Chinin mit verschiedenen Arsenverbindungen bei Malaria tropica.** [The Combination of Quinine and Various Arsenic Compounds in Tropical Malaria.] —*Ibid.* Sept. 25. No. 39. pp. 1284–1285. With 2 charts.

These notes come from a "malarial laboratory" in Slavonia, in the hospital attached to which several thousand cases of tropical malaria have been treated. While many cases yielded to parenteral quinine others, especially chronic cases towards the end of the malarial season, did not. A course of quinine and neosalvarsan was therefore tried in numerous cases with apparently favourable results but as the observation period did not exceed 15–20 days, followed by a "provocative" injection of milk, details are not here given. Similar results were obtained when more readily obtainable salts of arsenic were substituted for neosalvarsan, and the author concludes that this and other arsenical preparations have merely a determinative influence by preventing the fixation or destruction of arsenic by the tissues. Curves of the course of excretion of quinine in the urine of quinine-treated cases, before and after an injection of neosalvarsan, are held to support this idea.

A. G. B.

Pende (N.). **Le ipodermoclisi di dosi generose di chinino in soluzione fisiologica adrenalinizzata, quale metodo elettivo di cura della malaria nei combattenti.** [The Employment of Large Hypodermic Doses of Quinine in Adrenalized Salt-Solution as a Method of Election for the Treatment of Malaria in Soldiers.]—*Policlinico.* Sez. Prat. 1917. Nov. 4. Vol. 24. No. 45. pp. 1329–1333.

The author recommends the following method for the treatment of malaria in soldiers. Sterilized physiological salt-solution is supplied in capsules containing 250 grammes each, as one of the medical stores of the Italian army. An india-rubber tube 1½ metres in length, and of suitable calibre, is sterilized by boiling, and one end is attached to a hypodermic needle. The pointed end of a capsule containing salt-solution is then cut off with a file, and the other end of the rubber tube is fitted on to the capsule. The capsule being then inverted, the other

end is also cut off and a solution of 2 grammes of bi-hydrochlorate of quinine (equal to 1·64 grammes of alkaloid), along with half a cubic centimetre of commercial solution of adrenalin (= ½ milligramme of adrenalin), is introduced into the capsule by means of a syringe. The capsule being then held by an assistant, at the height of the shoulder above the patient's bed, the needle attached to the lower end of the tube is inserted under the skin of the front of the patient's thigh, and the solution allowed to flow in. The process of injection takes from 10 to 20 minutes, and is remarkably free from pain.

The author's routine plan of administration is as follows:—A first injection is given some 6 or 7 hours before an expected paroxysm of fever and is followed by a second one within 15 to 24 hours. In grave cases the interval is reduced to 12 hours. The patient is then kept without quinine for 5 to 6 days, after which a third dose is given, followed by a fourth at a similar interval. After this, quinine is given for 2 days by the mouth, in a dose of 2 to 3 grammes a day, in capsules, followed by an interval without quinine of a week, on Koch's plan. This treatment is kept up for 2 months, the patient being placed at the same time on a supplementary course of iron and arsenic. The recovery of patients treated on this system is said to be remarkably quick and permanent, so as to obviate the necessity for sending them on furlough. The author has never seen any albuminuria resulting, and the intention of the adrenalin is to prevent the vaso motor collapse which might ensue as the result of injecting such large doses of quinine.

J. B. N.

Ebbes (Franz). **Bemerkungen zur Malariafrage aus Albanien.**—*Wien. Klin. Woch.* 1917. July. Vol. 30. No. 29. pp. 909–910.

The author asserts (but gives no figures) that a mixture of quinine bichloride with sublimate or neosalvarsan gives better results than the quinine alone. The following course is strongly recommended: First neosalvarsan quinine intravenously (0·6 gm. neosalvarsan and 1 gm. quinine bichloride), on the next three days a quinine-sublimate injection (1 gm. quinine bichloride and 0·03 gm. sublimate), then a pause of eight days, a second three days' quinine sublimate course, and another eight days' pause, a third three day quinine sublimate course, and finally a quinine neosalvarsan injection. He says that quinine resistant cases yield to this method.

A. G. B.

Stephens (J. W. W.), Yorke (W.), Blacklock (B.), Macfie (J. W. S.), Cooper (C. Forster) & Carter (H. F.). **Studies in the Treatment of Malaria. V. Intramuscular Injections of Quinine Alkaloid in Simple Tertian Malaria.** *Ann. Trop. Med. & Parasit.* 1917. Aug. 23. Vol. 11. No. 2. pp. 173–182. With 5 charts.

The 32 cases selected for experimental observation were adult males infected with simple tertian in Macedonia at least nine months before, and all had had more or less quinine. The intramuscular injection used was an insoluble form of quinine, to test whether a presumed more gradual absorption would give evidence of a more

prolonged therapeutic effect; it was made by dissolving 1 gm. of quinine alkaloid in 1 cc. of 90 per cent. alcohol and making up the volume to 3 cc. with sesamum oil. The results are recorded in tabular form up to the twenty-seventh day, and the conclusion drawn is that a single injection containing 15 to 30 grains of this alkaloid, or a daily injection in two successive days, stops the febrile paroxysms and causes the disappearance of all stages of the parasites from the cutaneous blood for a time: in the great majority of cases a relapse occurs within two to four weeks.

Subcutaneous injections of the solution caused sloughing. Intramuscular injections up to 4 cc. caused slight and temporary pain, and in larger quantities caused more severe and recurring pain; there might be diffuse swelling at the site, but no suppuration.

A. A.

Stephens (J. W. W.), Yorke (W.), Blacklock (B.), Macfie (J. W. S.) & Cooper (C. Forster). **Studies in the Treatment of Malaria. III. Intravenous Injections of Quinine Bihydrochloride. IV. Intramuscular Injections of Amylopsin and Trypsin in Simple Tertian Malaria.**—*Ann. Trop. Med. & Parasit.* 1917. Aug. 23. Vol. 11. No. 2. pp. 149–164. With 8 charts; pp. 165–171. With 10 charts.

Thirty cases—simple tertian 21, malignant tertian 7, double infections 2—were treated by intravenous injections of quinine bihydrochloride in 10 per cent. solution in normal saline, and the blood was systematically examined. The results are recorded in tabular form, and from them the authors draw the following conclusions: that, in simple tertian, intravenous injections of 10 to 15 grains—either one injection or a series of six—effect a cessation of febrile paroxysms and disappearance of the parasites from the cutaneous blood for a time, relapses occurring at approximately the same interval after the conclusion of treatment, whether with one or six injections; but that in malignant tertian after exactly the same conditions of treatment, the parasites did not disappear.

In the entire series of 127 injections thrombosis occurred in four patients only—and six instances altogether, but no other symptom worthy of note.

Ten cases of simple tertian, all adult males infected in Macedonia at least six months before who had had more or less quinine afterwards, were treated with intramuscular injections of amylopsin and trypsin—one ampoule of Fairchild Bros. and Foster's preparations of each with normal saline to 10 cc. Temperatures were taken and blood examined daily. The results are recorded in tabular form and the authors conclude that such injections were of no value. Some swelling and tenderness occurred at the site of injection.

A. A.

Falconer (A. W.) & Anderson (A. G.). **Notes on the Treatment of Subtertian Cerebral Malaria with Quinine and Galyl.**—*Lancet.* 1917. Sept. 29. pp. 486–488.

The authors give short abstracts of nine severe cases of subtertian malaria in the treatment of which galyl was employed: seven had

received quinine in various forms before galyl was used, one was treated with galyl alone, and one received quinine as an ultimatum after the condition had been improved but not completely restored by galyl.

They conclude that in subtertian malaria when it is resistent to quinine the combination of galyl gives encouraging results, and that in cases where some overpowering idiosyncrasy prohibits the use of quinine galyl may prove to be a valuable substitute.

Galyl was given by intravenous injection in doses ranging from 0·2 to 0·4 gm., without danger.

A. A.

ORENSTEIN (A. J.) & WATKINS-PITCHFORD (W.). **Observations on the Effect of Intravenous Injections of Tartar Emetic in Cases of Malaria.**—*Med. Jl. S. Africa.* 1917. Apr. Vol. 12. No. 9. pp. 135–140.

The authors give separate summaries of 25 cases of malaria—24 subtertian, 1 benign tertian—treated with intravenous injections of tartar emetic and with large doses of quinine, and carefully observed. The injections consisted of 1 up to 5 cc. of a 4 per cent. solution of tartar emetic in 2 per cent. aqueous carbolic acid, diluted immediately before use with 4 volumes of normal saline: the number of such injections ranged from 1 (in 11 cases) up to 4 (in 4 cases). The quinine was given in acid solution, usually by the mouth in doses of 10 or 15 grains of the hydrochloride three times a day.

In 22 cases—all subtertian—the treatment with tartar emetic was undertaken immediately, or almost immediately, after discontinuation of the routine quinine treatment: in 3 cases—2 subtertian, 1 benign tertian—the treatment with tartar emetic was followed by the routine quinine treatment.

With regard to the 22 subtertians treated with quinine alone to begin with and tartar emetic alone finally, the summaries show that only crescents were found remaining in the blood after terms of quinine treatment ranging from 6 to 49 days, but these were found no more after the tartar emetic treatment had been substituted.

With regard to the 2 subtertians treated with tartar emetic alone to begin with, the summaries show that crescents and rings (1 case) or rings only (1 case) were found in the blood from 5 to 8 days after administration of tartar emetic, and that after the subsequent administration of quinine no forms of the parasite were discovered at all.

With regard to the single case of benign tertian, trophozoites alone were found before and 5 days after an injection of tartar emetic, but they could not be discovered after following up with quinine. (In one of the subtertian cases that had received quinine and tartar emetic an attack of benign tertian supervened, it is noted.)

The results of the successive blood examinations are given qualitatively, not quantitatively, as regards parasites.

The authors are of opinion that their observations support the thesis of ROGERS as to the employment of tartar emetic for cleansing human carriers from the propagative forms of the subtertian parasite. They are inclined, both in the title of their paper and in the frequent

iteration of the adjective " unsuccessful " in respect of their quinine treatment, to attribute the disappearance of crescents to the tartar emetic. But this inference is not justified by any of the five canonical methods for the inductive elimination of cause and effect. Taking the detached statements of the observed facts as the authors present them, they do not exclude quinine from the antecedent causes or part causes of the effects recorded, and although they suggest the possibility of tartar emetic having been part of the cause of the phenomena observed, they certainly do not separate tartar emetic as the sole sufficient cause.

A. A.

Levy (M. D.) & Wall (Dick P.). **The Use of Tartar Emetic in the Treatment of Malaria—Preliminary Report.**—*Interstate Med. Jl.* 1917. Sept. Vol. 24. No. 9. pp. 858–860.

Short abstracts of three chronic cases of benign tertian treated by intravenous injections of tartar emetic: the doses ranged from 2 to 4 cc. of a two per cent. solution, and the number of injections administered in a single case were 1, 3, and 4. The results were reduction of temperature and apparent relief to the patient, but not disappearance of the parasites. Ultimately the patients were all put on quinine and urea hydrochloride, after the tartar emetic had been stopped.

A. A.

Appel (Leo). **Zur Behandlung der Malaria mit Methylenblau und Salvarsan.**—*Deut. Med. Woch.* 1917. Oct. 25. Vol. 43. No. 43. pp. 1359–1360.

The author, working at Sarajevo, found that these substances cannot be administered together owing to decomposition of the neosalvarsan; but if the methylene blue be injected intravenously, and then, after an interval of 4 hours, the neosalvarsan, the results—so far as their recency justifies a conclusion—are better than quinine or quinine and neosalvarsan, particularly with benign tertian. Over 100 cases—severe tertian, subtertian, and mixed infections—have thus been treated. In 90 per cent. the parasites disappeared after the first double injection, with 20 per cent. of relapses; in either case the treatment is repeated twice at ten days' interval. The technique is as follows: 2 gm. of medicinal, chemically pure, zinc free methylene blue is completely dissolved, by boiling, in 100 gm. of distilled water, filtered, and again sterilised for keeping; 10 cc. of this solution, warmed, is slowly injected. This is followed four hours later by 0·45 gm. neosalvarsan in 10 cc. of water. Lately the author has given 3 daily methylene blue injections, the last of them followed by neosalvarsan.

The injection of methylene blue turns the skin of the whole body bluish-green, which fades after 15 minutes. Burning in the throat and faintness may occur. Contra-indications must be looked for as for salvarsan.

A. G. B.

MONTPELLIER (J.). **Essai de traitement du paludisme par le luargol (102 de Danysz).**—*Paris Med.* 1917. June 9. Vol. 7. No. 23. pp. 498–499.

Attracted by its success in syphilis, the author tried luargol, in repeated small doses (·05 to ·15 gm.) by intravenous injection, in malaria. In 7 cases of benign tertian the parasites disappeared from the circulation very quickly. The author's account of its action in 3 cases of malignant tertian is somewhat ambiguous: crescents were not affected, but it is clearly stated that in one of the cases the temperature, which had resisted quinine and hectine, was brought down to normal. In one case of mixed benign and malignant tertian only the parasites of the former disappeared.

Always, apart from any direct effect upon the parasites, there followed an abundant and rapid repair of the blood, the ratio of red cells being increased, in 15 days, from 500,000 to 1,000,000, and of haemoglobin from 5 per cent. to 18 per cent.

A. A.

WILLIS (Horace). **A New "Specific" for Malaria, Etc.**—*Indian Med. Gaz.* 1917. July. Vol. 52. No. 7. pp. 230–231.

The author makes it known that it is only with the greatest diffidence and from reluctance to incur the imputation of criminal modesty that he has at length made up his mind to speak of a cure for malaria 'invented" by himself, and practised by himself with unvarying success for 16 years, ever since he discovered that persistence in the use of quinine was "a waste of time and life."

The author points out that his invention is by no means an empirical one. It is based partly on the argument that, since malaria parasites destroy the red blood cells the natural responsory is not quinine, which only aids the destruction, but something that repairs and refreshes the blood; and partly on the hypothesis that "as the disease was indigenous to the country so must also the remedy be."

The indigenous blood-restoratives selected by the author, after research in old vernacular liturature, are "the raw juice of a certain species of lemon, a quantity of crude biborate of sodium, and the sulphate, phosphate, and chloride of sodium," in combination. These substances, however, are only useful in their crude natural form, and the combination must be made by a particular firm of pharmacists in accordance with the author's "crude formula"; corresponding preparations of the British Pharmacopoiea are useless, and the nature of the necessary ingredients is such that they cannot be compounded by the ordinary practitioner.

The original specific has, in the author's opinion, been perhaps improved by the later addition of iron and vinum antimoniale.

A. A.

JEANSELME. **Du groupement en colonies agricoles des soldats paludéens, momentanément inaptes.**—*Bull. Acad. Méd.* 1917. July 10. 3 Ser. Vol. 78. Year 81. No. 28. pp. 21–24.

A sagacious argument for segregating military malaria-convalescents in agricultural colonies, in districts free from Anopheles, under proper

medical supervision. In rural surroundings, and in properly apportioned rustic occupations, the convalescents would improve both in body and soul, and would also be doing something for their keep.

A. A.

Dudgeon (Leonard S.) & Clarke (Cecil). **A Contribution to the Microscopical Histology of Malaria, as occurring in the Salonika Force in 1916, and a Comparison of these Findings with Certain Clinical Phenomena.**—*Lancet.* 1917. Aug. 4. pp. 153–156.

These microscopical investigations were undertaken mainly for the purpose of throwing light upon the cause of death in rapidly fatal cases of malaria and on the cardio-vascular derangement so frequently observed in the malaria of the Macedonian armies.

Examination of the heart muscle in six cases revealed fatty degeneration in all, and diffuse fatty change similar to that occurring in acute diphtheria in five : in most cases also blocking of the capillaries with infected red-cells was noted.

In the adrenal glands general congestion, and a loss of the characteristics lipoids, were constant features : among the other pathological changes noticed were deficiency of the medullary chromaffin, abundance of the deep cortical pigment, haemorrhage, phagocytosis of red cells, thrombosis and necrosis, and vacuolation of the cortex.

The brain, examined in three cases of fatal coma, showed engorgement of capillaries and arterioles, degeneration of nerve-cells, and—particularly in the white matter—thrombosis : in 2 cases the red-cells in the engorged vessels were heavily parasitised ; but in the third case, which had been treated very energetically with quinine, no parasites could be found, so that the action of something apart from parasites is postulated—possibly a toxin.

In the spleen congestion and excessive phagocytosis of red blood cells was always observed, and no evidence of amyloid degeneration was ever obtained. Among other changes found were necrosis chiefly of the pulp but sometimes of the Malphighian corpuscles, capillary thrombosis, and infarction. Necrosis of the Malphigian corpuscles was particularly pronounced in a case of blackwater fever.

The liver showed deposits of pigment, fatty change, thrombosis, and focal necrosis, but no amyloid change. The infection of the red-cells in the thrombi was not so much marked as in the other organs. The bile, examined in a considerable number of cases, was found to be sterile. In a case of blackwater fever the fatty change and the necrotic foci were remarkably distributed in the central zones.

Among the pathological changes in the kidney thrombosis, necrosis, and fatty degeneration of the epithelium, particularly that of the convoluted tubules, were remarked. In one case there was diffuse and intense nephritis. In a case of blackwater fever the whole renal tissue showed extreme degeneration, and the tubules were blocked by clots or by thick granular deposit.

The intestines, examined in one case of pure uncomplicated malaria, showed congestion of mucosa and submucosa, scattered necroses of mucosa, microscopic ulceration, and in the muscularis large areas of mucoid degeneration.

A. A.

MITZMAIN (M. Bruin). **The Malaria Parasite in the Mosquito. The Effects of Low Temperature and other Factors on its Development.** —*Public Health Rep.* 1917. Aug. 31. Vol. 32. No. 35. pp. 1400–1413.

The author's very carefully conducted experiments, which are fully described and tabulated, were designed to investigate the influence of what the author calls *intermittent* low temperature upon the development of the malaria parasite (subtertian) in the mosquito. Laboratory bred Anophelines after biting the human carrier were kept at diminishing temperatures indoors, and finally in outdoor cages in winter (November to mid-January), whence individuals were from time to time brought indoors, again kept for a time at higher temperatures (20° C. to 32° C.), and then examined.

The experiments show that although under such fluctuations of temperature the development of the parasite may proceed to certain stages, in some instances even to the sporoblast stage, the formation of perfect sporozoites did not take place—the term of observation being fixed at 70 days. The author therefore thinks it justifiable to suppose that mosquitoes ingesting gametocytes before winter sets in may become innocuous during hibernation.

In the course of his work the author obtained partial confirmation of DANIELS' observation (*British Medical Journal*, 1901, January 26), that the infection of an individual mosquito is directly dependent upon the number of bites taken from the human carrier.

The author also notes, as possibly having some bearing on the question of infectivity, that crescents may pass away unchanged in the mosquito's dejecta : in one instance, where blood from the human carrier showed 63 crescents to 100 leucocytes, the proportion of crescents to leucocytes after passing through the mosquito was 87 to 100.

A. A.

MITZMAIN (M. Bruin). *Anopheles punctipennis*. **A Note on its Ability to serve as a Host for** *Plasmodium falciparum*.—*Public Health Rep.* 1917. July 6. Vol. 32. No. 27. pp. 1081–1083.

The author now records that *Anopheles punctipennis* (which was known to be easily susceptible to infection with *Plasmodium vivax*) is easily infectible with *P. falciparum* : in a series of 16 mosquitoes of this species given a single feed, 1 became infected, and in a series of 36 given a variable number of feeds, 13 infections resulted.

The author summarises the known susceptibility of the common North American Anophelines as follows :—*A. quadrimaculatus* may serve as a host for all three species of malaria-parasites : *A. punctipennis* and *A. crucians* are susceptible to infection with *Plasmodium vivax* and *P. falciparum*.

A. A.

ROUBAUD (E.). **Les anophèles français des régions non palustres sont-ils aptes à la transmission du paludisme ?**—*C. R. Acad. Sci.* 1917. Sept. 17. Vol. 165. No. 12. p. 401.

The author, wishing to satisfy himself as to the infectivity of the stock of *Anopheles maculipennis* native to the environs of Paris, which

some people had taken leave to doubt, made experiments to that end. Experiments made between the 13th August and the 3rd September showed that the local mosquitoes of this species could be infected both with benign tertian and malignant tertian. Two experiments made [it may be presumed] after the 3rd September, were negative, and the author suggests that possibly the patient upon whom the insects were fed was not infective; but the atmospheric temperature at the time of these two unsuccessful experiments is not recorded.

A. A.

Mesnil (F.) & Roubaud (E.). **Sur la sensibilité du chimpanzé au Paludisme humain.**—*C. R. Acad. Sci.* 1917. July 2. Vol. 165. No. 1. pp. 39–41.

The authors inoculated a female chimpanzee, well acclimatised and well established in the laboratory, with blood containing numerous benign tertian parasites drawn from a patient who, however, had been treated with quinine. No result followed. The chimpanzee was then inoculated with 8–9 cc. of blood containing all stages of the benign tertian parasite, taken from a patient who had not been treated with quinine. Twelve days afterwards young schizonts were found in the animal's blood: on the thirteenth day, gametes: on the fourteenth day young schizonts of the second generation: on the fifteenth day numerous forms of the parasite. After the twenty-second day parasites could not be found.

The authors record that *typical* rosettes were not found at any time—only sporonts of a decidedly abnormal cast; and that no marked febrile reaction occurred.

In both experiments the infected blood was injected along with an equal quantity of physiological citrated water.

A. A.

Rodhain (J.) & Van den Branden (F.). **Essais de transmission des parasites de la malaria à la roussette,** *Cynonycteris straminea.*—*Bull. Soc. Path. Exot.* 1917. Oct. Vol. 10. No. 8. pp. 704–706

Attempts to infect some "flying-foxes" or fruit-eating bats (*Pteropidae*) of the species *Cynonycteris straminea* with the parasites of malignant tertian and quartan malaria, both by specific inoculation and by exposing them to the bites of Anopheles brought from a heavily-infected native village, were uniformly unsuccessful.

A. A.

Carnot (Paul). **Sur la schizontolyse au cours de l'accès de paludisme. Action de sérum, des leucocytes, des extraits spléniques.**—*C. R. Soc. Biol.* 1917. July 28. Vol. 80. No. 15. pp. 685–688.

This is a continuation of a research [see this *Bulletin*, Vol. 10, p. 171] that claimed to show, to begin with, that the disappearance of the malarial parasites from the peripheral blood at the end of a paroxysm is not to be attributed merely to their imprisonment in the spleen, liver, and bone-marrow.

The present instalment describes, in addition to the technical methods of research employed, the subversive effect upon the parasites of malarial serum, malarial leucocyte extract, malarial spleen-juice, and ordinary spleen extract.

The destructive effect of serum obtained before a paroxysm is negligible, but that of serum obtained at the close is very well marked, its intensity being most evident in cases with a percentage of uninuclears above 40, and again in cases where the spleen is considerably enlarged.

The effect of leucocyte-extract is often more manifest than that of the corresponding serum, particularly when the leucocytes furnishing the extract are taken at the end of a paroxysm and the percentage of uninuclears is high.

Spleen-products obtained by puncture appear to be superior in activity to serum and leucocytes from the corresponding peripheral blood. Spleen-extracts—those so far used in the experiments having been made from p.m. non-malarial spleens and from animal spleens—appear to be more effective than extracts of other organs.

The observed effects of bile, bile-salts, and divers antimalarial drugs will be reported in another instalment.

As regards technique: the parasites required for experiment (*P. vivax* in this connexion) were obtained by drawing infected blood at the very outset of a paroxysm, and then rapidly defibrinating and centrifugating. In separating the infected corpuscles nothing must be used but a serum that is known positively to be inert. The infected corpuscles, in serum to which dextrose may be added after Bass's method, are then distributed in small tubes, which are kept at a temperature of 38° C., along with the organic extracts, etc., whose action is to be observed. Films are made for observation, in the ordinary way, every half-hour. If the effect is intense it may be manifested in half-an-hour; but in other cases the effect may not be evident until three or even four hours.

The author emphasises the suggestive observation that sometimes in films where most of the parasites have disappeared, or have become profoundly altered for the worse, a few schizonts, either immature or ripe, may still be found quite unaffected.

A. A.

Reinhard (P.). **Ueber Provokation latenter Malaria durch Bestrahlung mit ultraviolettem Licht.** [The Activation of Latent Malaria by Irradiation with Ultraviolet Light.]—*Münch. Med. Woch.* 1917. Sept. 11. Vol. 64. No. 37. pp. 1193–1194.

The author remarks that in latent malaria quinine fails because the parasites are not in the general circulation; except in relapses they are inaccessible to energetic treatment unless one brings the schizonts into the circulation by artificial means. Studying the causes which produce relapses he concluded that they have in common a purely mechanical factor and this he takes to be an influence on the blood pressure. In this way regions which normally take little part in the circulation, such as the sinus of the spleen, might be swept with a strong current of blood carrying parasites into the general circulation. Bach has shown, he writes, that irradiation with the ultra-violet quartz

lamp can lower blood pressure. He therefore applied the method to cases of latent malaria. The technique is described. The irradiation was broken off when schizonts appeared in the peripheral blood, usually after 4–5 days. Quinine was then given. 38 cases were so treated, of which 24 became positive and 14 remained negative, while of 34 controls (without quinine or irradiation) only 10 became positive; that is, of the cases rayed twice as many relapsed than of those not rayed. Moreover of the former class half relapsed within 7 days and five-sixths within 12, whereas with the controls the intervals were much longer, up to 3 weeks. Still better results were obtained with the "Aureole lamp" of Siemens and Halske.

A. G. B.

Reichenow (Eduard). **Sobre el problema de la immunidad de los negros contra el paludismo.** [The Immunity of Negroes towards Malaria.]—*Bol. Inst. Nac. Higiene de Alfonso XIII.* 1917. Mar. 31. Vol. 13. No. 49. pp. 29–42.

The author, who is a German colonial surgeon, having had occasion to examine a village of Haussa negroes for the presence of sleeping sickness, took the opportunity to ascertain the percentage of those who showed malaria parasites in their blood, the total number of persons examined amounting to 176. The figures were as follows:—

| Ages. | Number. | Percentage Infected. |
|---|---|---|
| 0– 5 | 15 | 100 |
| 6–10 | 41 | 73·2 |
| 11–15 | 32 | 65·6 |
| 16–20 | 46 | 54·4 |
| 21–25 | 20 | 45 |
| 26–30 | 7 | 57·2 |
| 31–40 | 10 | 50 |
| Over 40 | 5 | 40 |
| | 176 | |

The conclusion drawn is that there is no hereditary immunity among negroes to malaria, but a considerable degree of acquired immunity. According to the author, Haussas differ from other negroes in being able to state their age accurately.

J. B. N.

Bertarelli. **Le specie differente di Malaria.** [The Different Forms of Malaria Parasite.]—*Gaz. d. Osp. e d. Clin.* 1916. Dec. 28. Vol. 37. No. 104. pp. 1633–1634.

A short article drawing attention to the anomalous forms of malaria parasite described by Stephens as *Plasmodium tenue*, by Ahmed Emin as *P. vivax* var. *minuta*, and by Marzinowsky as *P. caucasicum*. The author says that in 1911 on the Madeira River in Brazil he had himself met with cases of aestivo-autumnal fever in which the parasites were reduced to the size of an Anaplasma, being hardly more than a small mass of chromatin substance. In these cases doses of as much as 1½ grammes of quinine given by the mouth would prove ineffective.

J. B. N.

DE MELLO (Froilano). **Y a-t-il une nouvelle espèce de plasmodie malarienne à Gôa?**—*Bol. Ger. Med. e Farmacia.* Nova-Gôa. 1917. Apr. Vol. 4. No. 4. pp. 131–135.

After discussing clinical phenomena in certain cases of malarial fever that appear to justify the suspicion that something other than a double infection with any of the generally recognised species of malarial parasites is implicated in them, the author gives certain details of a case of quotidian fever which, though resisting quinine for some days, gradually yielded to cinchona febrifuge, and in which the parasites observed resembled in their young stages STEPHENS' *P. tenue*, and in their sexual stage were crescents having much less pigment than those of *P. falciparum*, and a nucleus larger and rounder and also finely vacuolated.

A. A.

ROUBAUD (E.). **Méthodes rapides pour les examens de sang paludéen en goutte épaisse.**—*Bull. Soc. Path. Exot.* 1917. Oct. Vol. 10. No. 8. pp. 702–703.

For the rapid detection of malaria parasites the author dries a thick film very quickly by heat (45°–50° C.) and then haemolyses it in distilled water (5–10 minutes). This procedure destroys the parasites, but leaves their distinctive yellow-brown pigment, which can be shown up more clearly if the film be stained for a few seconds with thionine or carbol violet. In benign tertian the irregular streaks of small pigment-granules of the schizonts can be distinguished with ease from the blocks of pigment of the female gametes and the dense platelets of the male gametes; but the forms of the other species of parasites are not so easily discerned. In any case young forms still deficient in pigment cannot be detected.

For the rapid detection of crescents the author places the dried thick film in a solution of thionine in distilled water, of the strength of 1 in 10,000, for 10 to 15 minutes. This haemolyses the film and stains the crescents simultaneously.

A. A.

TAYLOR (H. A.). **A Comparative Study of Thick and Thin Blood Smears for Diagnosis of Malarial Fevers.**—*Jl. Amer. Med. Assoc.* 1917. Mar. 10. Vol. 68. No. 10. pp. 771–772.

In the course of a survey in N. Carolina two smears—one thick, one thin—were made from each of 3,613 apparently healthy persons. In 526 thicks parasites were demonstrated in examinations of five minutes' duration; but in the corresponding 526 thins the demonstrations were confirmed in only 125 cases, after examinations lasting 30 minutes. The greater accuracy and the saving in time of the thick film method is thus held to be confirmed.

In the routine of the Laboratory of Malarial Investigations the smears are now haemolysed, the slides being placed in acid alcohol until the haemoglobin is dissolved out; but some experience is said to be then necessary in differentiating the specific forms as they do not retain all their normal specific characters after this treatment.

A. A.

Senevet (G.). **Note sur un procédé de coloration de l'hématozoaire du paludisme.**—*Bull. Soc. Path. Exot.* 1917. July. Vol. 10. No. 7. pp. 540–542.

Where special stains are difficult to procure an improvised eosin-azure stain is recommended by the author.

Two solutions are made: one, of methylene blue 1 gm., sodium borate 3 gm., distilled water 100 gm., which solution is left to ripen for 8 to 15 days at a temperature of 37° C.; the other, of watery eosin 1 gm., distilled water 100 gm. The author prefers staining for 2 or 3 hours in a weak stain—1 drop of the eosin stain, and 1 or 2 drops of the blue stain to 20 cc. of neutral distilled water.

A. A.

LePrince (J. A.) & Griffitts (T. H. D.). **Notes from a Malaria Survey: Impounded Waters, Biting of *A. punctipennis* on Porches, Distance of Flight of *A. quadrimaculatus*.**—*Southern Med. Jl.* 1917. Aug. Vol. 10. No. 8. pp. 642–644.

*Anopheles punctipennis* is comparatively seldom found inside houses and has very rarely been observed replete with blood in bedrooms, but it is often found beneath houses and frequently bites people sitting out in the porch in the evening.

Specimens of *A. quadrimaculatus* lightly sprayed with watery eosin were recovered in one instance 5,565 feet from the point of liberation, in one instance 2,800 feet, in two instances 3,245 feet, and in three instances 3,090 feet.

A. A.

Léger (L.) & Mouriquand (G.). **Sur l'hibernation des Anophèles en Dauphiné.**—*Bull. Acad. Méd.* 1917. Oct. 2. 3 Ser. Vol. 78. Year 81. No. 38. pp. 357–359.

These observers note that in Dauphiny [as is also the case in England] the larva of *Anopheles bifurcatus* lives through the winter, and may complete its transformations into the adult stage about the end of April at the earliest. Their earliest observation of young larvae of *A. maculipennis* (which passes the winter in the adult stage) was in the month of May. In a pool at Monestier de Briancon, at an elevation of 1,500 metres, larvae of both species were found together on the 20th July.

A. A.

van Breemen (M. L.). **Een voorloopig onderzoek betreffende de verschillende soorten van Anophelinen, te Soerabaia voorkomende.** [A Preliminary Research on the Species of Anopheles occurring at Sourabaya.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1917. Vol. 57. No. 3. pp. 325–329.

The author finds that the species of Anopheles occurring at Sourabaya [Java] are four in number, namely, *A. barbirostris*, *A. sinensis*, *A. rossii* Giles and *A. rossii* var. *indefinitus*. A few larvae of *A. kochii* were also found at the beginning of the year. By far the most common species was *A. rossii* Giles, which is not generally

regarded as a malaria-transmissor. Specimens sent home to the British Museum by Dr. STANTON for identification were pronounced there to be *Myzomyia rossii* Giles (type form). There is plenty of malaria in the district. A further communication on the subject is promised.

J. B. N.

BASS (C. C.). **Some Important Facts about Malaria.**—*Kentucky Med. Jl.* 1917. Aug. 1. Vol. 15. No. 8. pp. 393–396. With 2 figs.

A first-class compendium of the cardinal facts—"what should be generally known about malaria, both by the medical profession and by all others."

A. A.

CHRISTY (Cuthbert). **Notes on Malaria for Officers and Men.**—*Lancet.* 1917. Sept. 29. pp. 485–486.

The author as Adviser for Malaria and Tropical Sanitation to the East African Expeditionary Force has codified the essential facts regarding the natural history of malaria and mosquitoes and their inter-relation, and also the essential measures of prophylaxis and treatment of malaria, within necessitated limitations.

A. A.

WURTZ. **De la conduite à tenir vis-à-vis des paludéens.**—*Presse Med.* 1917. July 26. Vol. 25. No. 42. pp. 435–436.

This is one of the numerous admonitory articles upon the prospective danger of a general recrudescence of malaria in France as one of the consequences of the expeditionary movements of the war.

A. A.

CARVER (A. E.). **Quinine Therapy and Hydrotherapy in the Treatment of Malaria.** [Correspondence.]—*Lancet.* 1917. Oct. 20. pp. 623–624.

The writer attests the value of quinine in malaria, recognizes that it is disgusting in the mouth, realizes the possibility that excessive doses may lower the natural defensive powers, and speaks favourably of intramuscular injections in severe cases. In cases that are not severe, as well as in cases that resist quinine, the writer in rather a lukewarm argument suggests baths.

A. A.

D'ANFREVILLE (L.). **La lutte antipaludéenne à Salé, Maroc.**—*Bull. Soc. Path. Exot.* 1917. Oct. Vol. 10. No. 8. pp. 710–715. With 1 map.

The interest of this paper is mainly local; but the moral of it appears to be the obvious one that local anti-malarial policy must be adapted to the settled indispensable customs of the locality.

A. A.

DELANOË (P.). **Sur les altérations des globules parasités par les hématozoaires du paludisme.**—*Bull. Soc. Path. Exot.* 1917. July. Vol. 10. No. 7. pp. 542–547.

The author finds that for studying the alterations in the infected red blood cells the method of PAPPENHEIM is superior to that of GIEMSA.

A. A.

Werner (H.). **Ueber Zählungsmethoden von Malariaparasiten. Bemerkung zu der Arbeit von Ballin in Nr. 23.**—*Deut. Med. Woch.* 1917. Oct. 11. Vol. 43. No. 41. p. 1299.

Refers to his previous publications (1912) on enumerative methods, from which extracts are given.

A. G. B.

Jarno (Leo). **Ueber Mononukleose bei Malaria.**—*Wien Klin. Woch.* 1917. July 19. Vol. 30. No. 29. pp. 914–915.

This paper deals with the phenomenon of "mononucleosis" in malaria cases both recent and chronic. The author has tried Brauer's subcutaneous injection of horse serum to bring out a latent malaria in 37 cases without success [see this *Bulletin*, Vol. 10, p. 155].

A. G. B.

Paris (P.). **Quelques mots sur les Moustiques et le Paludisme en France.**—*Jl. de Méd. et de Chirurg. Pratiques.* 1917. May 25. Vol. 88. No. 10. pp. 401–404.

An essay, by no means of an exhaustive kind, on mosquitoes and malaria, with some particular reference to the distribution of Anopheles and of latent or potential malarious areas in France.

A. A.

## BLACKWATER FEVER.

ARMAND-DELILLE (P.), PAISSEAU (G) & LEMAIRE (H.). **Note sur les caractères de la bilieuse hémoglobinurique observée chez les paludéens de l'armée d'Orient.**—*Bull. et Mém. Soc. Méd. Hôpit de Paris.* 1917. June 28. 3 Ser. Vol. 33. No. 21–22. pp. 773–776.

In the French Army of the East bilious haemoglobinuria has been a frequent complication of malaria, and 30 per cent. of the cases coming under the authors' observation have been fatal. Besides typical cases, other atypical cases showing the transition from malarial jaundice have been noticed.

Two predisposing conditions were observed to be of signal importance, namely a prolonged malarial infection (generally more than 6 months) and cold weather (the depth of winter)—the latter condition not so uniformly constant. All the cases had a history of preventive quinine, and generally of quinine treatment.

The rest of the paper consists of a description of the usual urine and blood phenomena during the haemoglobinuric crisis. A detailed description of the clinical and pathological observations will be published hereafter.

A. Alcock.

DE RAADT (O. L. E.). **Die komplementogene Wirkung von Chinin im Zusammenhange mit dem Entstehen des Schwarzwasserfieberanfalles.**—[The Action of Quinine in increasing Complement in Relation to the Onset of an Attack of Blackwater.]—*Arch. f. Schiffs.-u. Trop.-Hyg.* 1917. May. Vol. 21. No. 9. pp. 149–153.

The author refers to a paper published by him in 1909 in which he formulated certain "theoretical" conclusions. These were to the effect that predisposition to blackwater fever is due to the appearance of haemolytic amboceptors in the blood of the person concerned, these being mobilised under the influence of the malarial infection and having both a haemolytic and parasiticidal action. The onset or not of blackwater depends on the complement content of the blood and if this is low there is a gradual blood dissolution but no onset. Chill, excessive effort, traumatism and quinine cause a sudden overproduction of complement; this action may be called "complementogenous." He has experimented on the action of quinine in this direction, with five healthy Javanese and fifteen with chronic malaria. Whereas in four of the former the haemolytic power of the serum was unaltered and in one it was raised, in eight of the latter it was increased, some fifty, some a hundred per cent. The practical conclusion is [if the premisses are granted] that such persons in blackwater fever regions are in greater danger than those in whom quinine has no such action, and that an effort should be made to detect them. There is a hint also for the treatment of blackwater, namely to give some substance which will reduce the quantity of complement. This may be brought about in animals by intravenous injection of hypertonic salt solution, but not, as far as three experiments showed, in man. The author notes in conclusion that Dutch observers have shown that in paroxysmal

haemobloginuria complement vanishes from the blood. This perhaps explains the happy fact that in blackwater the haemolytic process as a rule soon comes of itself to an end.

A. G. B.

TORRANCE (R. A.) & BOWMAN (F. H.). **Report of Cases of Hemoglobinuria in Haiti.**—*U. S. Nav. Med. Bull.* 1917. Apr. Vol. 11. No. 2. pp. 141–150. With 5 charts.

The report includes 13 cases, with short abstracts of 8 of them. One case, of prolonged residence in Haiti and a history of former attacks, was fatal. The other cases recovered under treatment by intramuscular injections of quinine, absolute rest in bed, and large doses of weak solution (30 grains to the pint) of sodium bicarb. by mouth or, if necessary, by rectum. The quinine had to be given in this way as facilities for intravenous injection were wanting in the field.

A. A.

WRIGHT (Thomas E.). **Notes on the Treatment of Blackwater Fever.**—*New Orleans Med. & Surg. Jl.* 1917. Sept. Vol. 70. No. 3. pp. 222–225.

Regarding the retching and vomiting of blackwater fever as the most menacing symptoms of the disease, from the standpoint of practical treatment, and arguing from analogy that these symptoms are due to acid intoxication, the author concludes that the main line of treatment is to neutralize the assumed acidity with bicarbonate of soda [cf. BURKITT, this *Bulletin*, Vol. 7, p. 29]. This may be given in various ways as necessitated by circumstances—mouth, rectum, intravenous—in combination with glucose. Quinine can be employed, if necessary, after the vomiting, etc., are relieved.

In the course of discussion, enlivened by many humorous touches, one speaker stated that in his time turpentine had been extolled just as highly as bicarbonate of soda, and another speaker confessed that he was well satisfied with the treatment that he had learned from the mouth of an irregular (it is to be feared) practitioner : " Waal, Doctor, I has these cases of malayal hemectoria and I gives 'em calomel in teaspoonful doses, and I cure 'em."

A. A.

JOB (E.). **Note sur le traitement de la fièvre bilieuse hémoglobinurique.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. Jan. 18. 3 Ser. Vol. 33. No. 1–2. pp. 89–96.

After a discriminative review of various theories the author concludes in favour of the ultimate malarial origin of haemoglobinuric fever, and while allowing that quinine like other drugs may be ancillary to a haemoglobinuric convulsion he repudiates entirely the view that quinine is a specific cause of this disease.

He gives a resumé of 15 cases treated with quinine and chloride of calcium, in 11 of which malaria parasites were found. The course of treatment extended to 15 days, and the dose of quinine was gradually

increased from 1 cgm. on the first day to 1 gm. on the fourteenth and 15th days, the dose of calcium chloride being constantly 4 gm. The object of the calcium was to increase the globular resistance. The results of this treatment were extremely good, even in the cases where malarial parasites could not be detected.

A. A.

Amblard (L.-A.) & Eschbach (H.). **Bilieuse hémoglobinurique par laquage du sang.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. July 12. 3 Ser. Vol. 33. No. 23–24. pp. 814–818.

An account of an attack of haemoglobinuric fever in which a predominant phenomenon was observed to be a massive haemoglobinaemia.

A. A.

Wiener. **Einige Fälle von Schwarzwasserfieber.**—*Wien. Klin. Woch.* 1917. July 19. Vol. 30. No. 29. pp. 912–914. With 4 charts.

An account, with temperature charts, of four cases of blackwater which occurred in soldiers in South Albania. All were tertian; in one sub-tertian parasites were found also; all recovered.

A. G. B.

## AMOEBIASIS AND DYSENTERY.

### Amoebiasis.

Wenyon (C. M.) & O'Connor (F. W.). **An Inquiry into some Problems affecting the Spread and Incidence of Intestinal Protozoal Infections of British Troops and Natives in Egypt, with Special Reference to the Carrier Question, Diagnosis, and Treatment of Amoebic Dysentery, and an Account of Three New Human Intestinal Protozoa. [Conducted under the Auspices of the Medical Advisory Committee M.E.F. (January to August, 1916.)]** *Jl. Roy. Army Med. Corps.* 1917. Apr., May, June, Vol. 28. Nos. 4, 5, 6. pp. 461–492, 557–565, 686–698.

The first part deals with the treatment of *E. histolytica* and other protozoal infections of the human intestine. Treatment of *E. histolytica* cases by means of emetine hydrochloride administered by three methods is first described. The results obtained in carrier and acute cases are tabulated as follows. The treatment in each group consisted of a course extending over twelve days.

| | Emetine one grain a day injection. | Emetine one grain a day by the mouth | Emetine one grain a day injection; ½ grain a day by the mouth. |
|---|---|---|---|
| Carrier cases cured .. | 37 | 6 | 30 |
| ,, ,, relapsed .. | 10 | 2 | 0 |
| ,, ,, no reaction .. | 5 | 1 | 0 |
| Acute cases cured .. .. | 0 | 0 | 2 |
| ,, ,, relapsed .. | 6 | 2 | 5 |
| ,, ,, no reaction .. | 0 | 1 | 0 |

Attention is drawn to the fact that failure to cure by emetine by one mode of administration did not exclude the possibility of cure by another and also the successful results obtained in carriers are contrasted with the lack of success in the acute cases. The combined method of injection plus oral administration gave the best results. The authors discuss the existence of emetin resistant strains of amoebae, and the effect of emetin as producing encystment. Sections on the influence of other infections, diet, and rest in bed on treatment and the effects of emetin on the patient follow. Relapses after treatment were found to occur under twenty days except in three cases.

The second part deals with the treatment of *E. coli* infections and infections with Lamblia, Tetramitus, Trichomonas, Coccidia, I-cysts and Blastocystis. Emetin by the mouth or bismuth salicylate produced temporary disappearance of flagellates but relapse occurred after short courses. An account is given in the third part of experimental work with flies and laboratory animals, and also of experiments made to determine the power of resistance of protozoal cysts to disinfectant and other agents.

A summary of the results of this work is given :—

"1. Attempts were made to infect rats, mice and kittens with *E. histolytica*, both in faeces and liver abscess pus. Two kittens alone became infected.

"2. *Tetramitus mesnili* free and encysted failed to infect a rat, a mouse and a kitten.

"3. A kitten and a mouse failed to become infected with the human coccidium (Isospora).

"4. Lizards (Agama sp. ?) harbour tetramitus and an amoeba. The latter resembles *E. coli*, both in the free condition and the production of an eight-nuclear cyst.

"5. House-flies readily take up free and encysted forms of protozoa in faeces and can pass them from the gut as early as five minutes and as late as twenty hours after feeding.

"6. Wild flies captured in Alexandria often deposit in their droppings cysts of protozoa and eggs of worms which they have evidently taken up from human dejecta on which they have fed.

"7. A series of weighing experiments show that a single house-fly will take up one milligram of faeces in half an hour.

"8. Cysts of *E. histolytica* will survive in water but are killed instantaneously by drying. The cysts are killed at once by 1 in 20 cresol solution."

B. Blacklock.

WOODCOCK (H. M.). **Protozoological Experiences during the Summer and Autumn of 1916.**—*Jl. Roy. Army Med. Corps.* 1917. Sept. Vol. 29. No. 3. pp. 290–300.

The first section of this paper includes tables showing the percentage incidence of *E. histolytica* and other protozoa, in 659 cases of dysentery and diarrhoea ; of the cases 378 were British and 281 Indian.

Table II.—Occurrence of *E. histolytica.*

| Nationality. | Total findings of *E. histolytica.* | Percentage of total cases | Histolytica-form. | Percentage of total "dysenterics." | Percentage of blood and mucus stools. | Tetragena-form and (or) cysts. | Percentage diarrhoea stools. |
|---|---|---|---|---|---|---|---|
| British .. | 7 | 1 9 | 7 | 2·4 | 4·0 | — | — |
| Indian .. | 44 | 15 7 | 13 | 12·4 | 26·5 | 31 | 17·6 |

Table III.—Other Protozoan Infections.

| Nationality. | Number of cases. | *E. coli.* | Trichomonas. | Macrostoma. | Lamblia. | Balantidium |
|---|---|---|---|---|---|---|
| | | Per cent. | Per cent. | Per cent. | Per cent. | Per cent. |
| British .. | 378 | 6= 1·6 | 3= 0·8 | 2= 0·5 | 7=1·8 | — |
| Indian .. | 281 | 80=28·5 | 122=13·4 | 33=11·7 | 10=3·5 | 2=0·7 |

The author in discussing the possibility of establishing a diagnosis from the characters of the stool sample alone states that the presence or absence of amoebae in a dysenteric stool is the only safe guide. "Many cases," he states, "to all appearances similar, both macroscopically and as regards the nature of the cell exudate, have been met with coming under the category either of amoebic or bacillary dysentery."

Observations were made on Indians, 134 in number, who were normal as far as concerns their bowel condition. They were either in camp or in hospital for surgical treatment, malaria, etc. In 20 per cent. of these cases *E. histolytica* cysts were present. In view of this apparently natural infection in Indians the author concludes that "it is probable that on this account Indian troops were largely responsible for the outbreak of amoebic dysentery among the troops in Egypt and on the Peninsula in 1915." [Compare observation of YORKE and Collaborators, this *Bulletin*, Vol. 10, p. 128.] Further sections give the results obtained by emetine treatment, remarks on amoebae, flagellate infections and general considerations in infection with intestinal protozoa.

B. B.

AUBERT (P.). **Amibiase à l'Armée d'Orient.**—*Bull. Soc. Path. Exot.* 1917. July. Vol. 10. No. 7. pp. 611–629.

In this paper the author gives an account of an investigation into the prevalence of infection with dysentery amoebae and cysts. The patients were in hospital at Marseilles, Aix or Toulon, and had come from the East. They were 212 in number and taken from one or other of the three following groups :—

A. Patients who had had when in the East gastro-intestinal symptoms.

B. Patients who presented at the time of examination symptoms of dysentery or diarrhoea.

C. Patients presenting fever of long duration not capable of being referred to malaria, or any other cause.

The results of the examination of the stools are given and it is observed that pathogenic amoebae or cysts were present in 24·5 per cent. of the 212 cases.

The incidence of the infection was found to be for the localities Marseilles–Aix 34 per cent. of 132 cases, and Toulon 8·7 per cent. of 80 cases. The great difference appeared to require some explanation and the author suggests that it is to be found in the fact that at Toulon were received known cases of dysentery, cases which had been recognised and were severe. In consequence they had been more thoroughly treated, whereas the mild cases, many of which were unrecognized or insufficiently treated were in the Marseilles–Aix group. The author emphasizes the necessity of investigating amoebic infection even in cases which have had no clinical dysentery.

B. B.

CARTER (Henry F.), MACKINNON (Doris L.), MATTHEWS (J. R.) & SMITH (A. Malins). Part V with STEPHENS (J. W. W.). **Protozoological Investigation of Cases of Dysentery conducted at the Liverpool School of Tropical Medicine. (Second Report).**—*Ann. Trop. Med. & Parasit.* 1917. June 30. Vol. 11. No. 1. pp. 27–68.

Part I of this Report gives the protozoal findings in 826 cases of dysentery examined from Oct. 1 to Dec. 31, 1916. The Summary of this part is as follows :—

"1. From October 1st to December 31st, 3,930 protozoological examinations were made on the stools of 826 cases of dysentery.

"2. Of these, 420, or 50·8 per cent, were infected with protozoa.

"3. *E. histolytica* was found in 94 cases (11·4 per cent.), *E. coli* in 274 cases (33·2 per cent.), *G. intestinalis* in 151 cases (18·3 per cent.), *C. mesnili* in 36 cases (4·4 per cent.), and *T. intestinalis* in 7 cases (0·8 per cent.).

"4. The standard of non-infection for the majority (591) of the cases was three negative examinations."

Part II is occupied by a comparison of the authors' findings up to date with those of above observers. For this purpose they have availed themselves of the information contained in DOBELL'S report to the Medical Research Committee [see this *Bulletin*, Vol. 9, p. 404]. The protozoa are dealt with in turn and full details of the incidence of the infections are given.

In Part III the results are considered from the statistical standpoint.

Part IV contains important records of cases of infection with *E. histolytica* from the French front. Twenty cases are reported which have been observed by the authors in the last six months. The history of each case is briefly noted.

Part V contains records of treatment of *E. histolytica* infections with Alcresta ipecac., methyl emetine, and emetine bismuth iodide. Comparing the results obtained by a first treatment—not less than 10 gr. emetine—with Alcresta and the double iodide, the former gave 35·8 per cent. of 81 cases relapsed, the latter 6·2 per cent. of 16 cases relapsed.

It is noted that 3 cases which resisted treatment by Alcresta and methyl emetine proved also resistant to emetine bismuth iodide. One of these cases had three successive courses of 15, 36 and 60 grains Biniodide and of these courses the 60 grain course produced the least effect, cysts being passed throughout treatment.

B. B.

CARTER (Henry F.) & MATTHEWS (J. R.). **The Value of concentrating the Cysts of Protozoal Parasites in examining the Stools of Dysenteric Patients for Pathogenic Entamoebae.**—*Ann. Trop. Med. & Parasit.* 1917. Aug. 23. Vol. 11. No. 2. pp. 195–204.

The authors have examined 178 cases upon which they utilized the method of concentration described by CROPPER and ROW [this *Bulletin*, Vol. 9, p. 421]. The number of examinations by the concentration method was 523. No infection with *E. histolytica* had been discovered in 133 of these cases by 3 routine examinations carried out in the ordinary way. By using CROPPER and ROW'S method *E. histolytica* infection was demonstrated in 5 of these cases; one concentration examination was made in each case on the same material upon which the third ordinary routine examination had been made.

In 35 cases in which *E. histolytica* had been present and where the patients after treatment with emetine bismuth iodide or alcresta ipecac had been examined daily with negative result, a single examination made on the 24th day by the concentration method proved also negative.

B. B.

Smith (A. Malins) & Matthews (J. R.). **Further Records of the Occurrence of Intestinal Protozoa in Non-Dysenteric Cases.**—*Ann. Trop. Med. & Parasit.* 1917. Aug. 23. Vol. 11. No. 2. pp. 183–193.

The authors' previous paper on this subject [this *Bulletin*, Vol. 9, p. 445] dealt with 250 patients; the present records the results obtained in the examination of 200 additional cases. Of these 34·5 per cent. had protozoal infection of the intestinal tract, 7·5 per cent. having *E. histolytica* infection. The results are reproduced from the authors' table below:—

*The infections found in the* 200 *cases examined.*

| | Number of cases infected. | Percentage of all cases. | Pure infections. | Mixed infections. | Our previous results from 250 cases. |
|---|---|---|---|---|---|
| *Entamoeba histolytica* | 15 | 7·5 | 4 | 11 | 8·0% |
| *Entamoeba coli* .. | 47 | 23·5 | 32 | 15 | 19·2% |
| *Giardia* (=*Lamblia*) *intestinalis* .. | 23 | 11·5 | 13 | 10 | 8·0% |
| *Chilomastix* (=*Tetramitus*) *mesnili* .. | 4 | 2·0 | 3 | 1 | 2·0% |
| *Trichomonas intestinalis* .. .. | — | — | — | — | 1·7% |

An analysis of the figures is made with details as to the number of examinations, and occurrence of double and multiple infection. A section is devoted to a consideration of the relationship between the protozoal findings and the disease for which the patients were admitted to hospital. Among 100 malaria cases for example 6 cases of infection with *E. histolytica* were found. Again the cases are grouped and tabulated with reference to a history of previous dysentery. Of 42 cases with a history of dysentery 7·1 per cent. had *E. histolytica* infection. The authors state:—"It seems probable that there is little difference between the percentage of *E. histolytica* carriers among men who have had dysentery and the percentage of men who become carriers without suffering from dysentery at all." Wenyon's results are quoted for comparison, and finally the cases are classified according to the region in which they had travelled. Of 142 patients who had been to tropical or subtropical regions 7·7 per cent. had *E. histolytica* while this parasite was present in 6·9 per cent. (58 cases) who had been to France only.

B. B.

Fuchs (A.) & Bouchet (Henri). **Une petite épidémie d'amibiase sur le front.**—*Presse Méd.* 1917. Aug. 6. Vol. 25. No. 44. p. 455.

A small epidemic of amoebic dysentery occurred in a section of an infantry regiment occupying part of the first line. Four cases of liver abscess occurred and in two of these amoebae were found in the pus evacuated. The author notes the absence of dysenteric symptoms in these cases. He considers that a soldier who had been in Beyrouth and was a cyst carrier was the source of the infection. B. B.

Dargein. **Un cas autochtone d'hépatite suppurée d'origine amibienne.**—*Arch. Méd. et Pharm. Nav.* 1917. Feb. Vol. 103. No. 2. pp. 125–131.

The possibility of carriers of amoebic dysentery giving rise to epidemics is mentioned by the author àpropos of a case of liver abscess occurring in 1910 in a man born at Toulon who had never left that town. The history of the case is dealt with very fully; amoebae were found in the liver pus. B. B.

Mattei (Ch.). **Syndromes cholériformes et insuffisance rénale dans la dysenterie amibienne chez les soldats en campagne.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. Feb. 22. 3 Ser. Vol. 33. No. 5–6. pp. 366–377. With 1 chart.

In a series of 250 cases of amoebic dysentery the author met with 6 cases, all autochthonous, in which the following symptoms occurred: uncontrollable diarrhoea with pale watery odourless stools, vomiting, cramp, profound asthenia, rapid compressible pulse, and algidity. Three of the cases presented such symptoms at the clinical onset of their dysentery, the other three either during the course of or during convalescence from dysentery. Observations on the amount of urea contained in the vomited matter, urine, the faeces, and the blood were made and the results are presented graphically. The author concludes that most frequently such crises occur in those whose kidneys are affected by previous conditions, and who are subjected to over exertion. The treatment adopted therefore should be directed primarily towards the restoration as rapidly as possible of the renal functions. B. B.

Armand-Delille (P.), Paisseau (G.) & Lemaire (H.). **Sur le traitement des abcès du foie par l'émétine.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. June 28. 3 Ser. Vol. 33. No. 21–22. pp. 777–778.

This paper contains a general account of the authors' views on liver abscess. They consider that not only in the stage of hepatitis but also after abscess of considerable size has developed, treatment by emetine may effect a cure. They cite one case where resorption occurred when pus had been proved to be present by puncture; they attribute the successful result to emetine treatment. B. B.

Aimé (Henri). **Traitement combiné de la dysenterie amibienne.**—*Progrès Méd.* 1917. July 28. No. 30. pp. 253–255.

The author gives an account of 20 cases of amoebic dysentery treated by injections of emetine combined with administration of atoxyl.

The latter was given in cachets with lactose, the doses employed being 4 and 5 centigrammes, daily for short periods. The results were good, only 27 per cent. of cases proving refractory. The period of observation was too short to give satisfactory evidence of final cure.

B. B.

SAVAGE (R. E.) & YOUNG (J. R.). **Report on the Treatment of Fifty-Nine Cases of *Entamoeba histolytica* Infection. With Clinical Remarks.**—*Jl. Roy. Army Med. Corps.* 1917. Sept. Vol. 29. No. 3. pp. 249–275. With 12 diagrams.

The authors define their terms as follows:—"Cyst carriers," (a) cases which had had acute amoebic dysentery and been incompletely cured and were passing the encysted form of *E. histolytica* in their stools; (b) those who were passing cysts but had never had any clinical symptoms of amoebic dysentery. An "acute" case is so called if the large entamoebae, with included red blood corpuscles, are found. A case is described as cured if the stools have been free from infection for about three weeks after the conclusion of the emetine treatment.

Section I deals with Hypodermic injections of Emetine hydrochloride; Section II with Hypodermic injections of Emetine hydrochloride and Pulv. ipecac by the mouth; Section III, Emetine hypodermically and orally; IV, Emetine bismuth iodide; V, Emetine hypodermically and Emetine bismuth iodide. The authors' Table I summarizing the results obtained is reproduced below.

TABLE I.

Summary of the Results of the Treatment of Fifty-nine Cases of *Entamoeba histolytica* Infection.

| | | Cured. | Re-lapsed. | No re-action. | Total. |
|---|---|---|---|---|---|
| I. Emetine injections .. | Carriers | 8 | 5 | 3 | 16 |
| | Acute | 1 | 2 | — | 3 |
| II. Emetine injections and pulv. ipecacuanha .. | Carriers | 5 | 1 | — | 6 |
| | Acute | 1 | — | — | 1 |
| III. Emetine injections and orally .. .. | Carriers | 3 | — | — | 3 |
| | Acute | 1 | — | — | 1 |
| IVA. Emetine bismuth iodide .. .. | Carriers | 14 | 1 | 2 | 17 |
| | Acute | 8 | 6 | 2 | 16 |
| IVB. Emetine bismuth iodide (second course) .. .. | Carriers | — | 1 | — | 1 |
| | Acute | 1* | 1 | — | 2 |
| V. Emetine injections and emetine bismuth iodide .. .. | Carriers | 1 | 1 | — | 2 |
| | Acute | 2 | 6 | — | 8 |

* Since writing this report, Case 53, reported as cured by a second course of emetine bismuth iodide, has been readmitted to hospital with a relapse.

The remainder of the paper gives detailed accounts of the various groups.

Under Clinical remarks the effects of the administration of emetine bismuth iodide are discussed ; the dosage was 30–36 grains.

B. B.

Waddell (W.), Banks (C.), Watson (H.) & King (W. O. Redman). **A Report on the Treatment of 102 Carriers of Amoebic Dysentery with Emetine Bismuth Iodide.**—*Lancet.* 1917. July 21. pp. 73–77.

The form of the drug used was the keratin coated tabloid, each tabloid containing 1 grain of bismuth emetine iodide. The hour found most suitable for the administration of the daily dose—3 grains—was 1 p.m. after the midday meal. The effects were, in almost all cases, vomiting and purging, the former commencing an hour, the latter about 3 hours after taking the dose. The worst cases vomited 5 or 6 times during the 24 hours and some cases had 10–12 motions in this period. Stomach and bowel sedatives proved of little value, with the exception of tinct. opii which was seldom employed. A few of the patients were kept entirely in bed.

A note of caution is given about the necessity for obtaining definite evidence that the stool produced for examination is in fact that of the case under consideration. Elaborate precautions require to be taken to avoid substitution. The conclusions arrived at as the result of the authors' observations are :—

"1. Emetine bismuth iodide is much more effective than emetine hydrochloride in the treatment of carriers of *Entamoeba histolytica*, but about 20 to 25 per cent. of failures may occur.

"2. The intensely irritating properties of the drug in many cases are a drawback in its general application. [The authors note that salol-coated pills have now been introduced.]

"3. The definite failure to cure 19 out of the 102 cases treated at Barton may perhaps be in part due to the form of the drug employed (a keratin-coated tabloid).

"4. It is improbable that there were many relapses later than those discovered ; and as several of the cases had only 8 or 9 doses instead of 12, it seems likely that less than 36 grains may be effective.

"5. It is advisable to keep cases under observation for not less than 14 days after treatment, and to examine them not less than 4 times during that period if relapses are to be detected.

"6. The drug is without appreciable effect upon the intestinal flagellates, but has an effect, usually temporary, on *Entamoeba coli*."

B. B.

Lillie (D. G.) & Shepheard (S.). **A Report on the Treatment of *Entamoeba histolytica* "Carriers" with Emetine Bismuth Iodide. Giving a Comparison between the Keratin-Coated Tabloids and Salol-Coated Pills.**—*Lancet.* 1917. Sept. 15. pp. 418–419.

One hundred and four cases were treated in all. The treatment consisted of 3 grs. per day for 12 consecutive days. The tabloids or pills were given entire as a full dose during breakfast. A case was considered cured when he had had at least six negative tests over a

period of not less than seven weeks from the termination of treatment. The authors give an account of investigations which they made into the effect of the time interval between the onset of disease and treatment, and into the occurrence of vomiting, loss of weight, and the effects of age on curative results, and on vomiting. The conclusions are :—

" 1. (a) That ' carriers ' of *E. histolytica* who had not had any injections of emetine hydrochloride were cured to the extent of 78 per cent. by two courses of the salol-coated emetine bismuth iodide pills. (b) In the case of men who had had emetine injections 72·8 per cent. were cured by two courses of the salol-coated pills. (c) In the case of men who had not had emetine injections 70 per cent. were cured by two courses of the keratin-coated tabloids. (d) In the case of men who had had emetine injections 45·4 per cent. were cured by two courses of the keratin-coated tabloids.

" The difference between the percentages in (a) and (b) are within the range of experimental error and need not be considered. But in (c) and (d) the difference is too great to be ignored. This difference may be due to variation in the quality of the keratin-coated tabloids, but such a defect would be common to both cases which had received injections of emetine and those which had not. It is generally admitted that certain ' carriers ' of *E. histolytica* are not cured by emetine in any form, and it may be, as Mr. Dobell suggests, that these cases become segregated in (d). It seems possible that the difference in the two percentages may be due to the injections of emetine rendering the ' carriers ' less liable to be cured by E.B.I.

" For comparison with the above percentages of cures by a maximum of 72 grains of E.B.I. carried out in the special ward, we give the number and percentage of cures in the other wards of this hospital. The number of grains of E.B.I. which these cases received varied from 36 to 200. A case was regarded as cured after not less than 5 negative examinations over a period of not less than 5 weeks after the end of treatment. The last test was made at the Barton Convalescent Depot. Out of 160 cases treated 142 were cured—i.e., 88·7 per cent.

" 2. There is no evidence that the length of time between the dates of onset of dysentery symptoms and the treatment has any effect upon the chances of cure by E.B.I.

" 3. There is no ground for the belief that the vomiting diminishes the chance of cure by the E.B.I. treatment. There is nearly as much vomiting among the cases which are cured as among those which relapse.

" 4. The age of the patient has no effect upon the chance of cure by the drug. But there is evidence to show that men over 40 years of age vomit less while undergoing treatment.

" 5. The salol-coated pills are a distinct improvement upon the keratin-coated tabloids from a curative point of view. They also cause less vomiting and loss of weight."

B. B.

Walker (Ernest Linwood) & Emrich (William). **The Treatment of Carriers of *Endamoeba histolytica* with Oil of Chenopodium.**—*Jl. Amer. Med. Assoc.* 1917. May 19. Vol. 68. No. 20. pp. 1456–1457.

Oil of chenopodium in doses of 16 minims was used in the treatment of 14 adult male carriers of *Endamoeba histolytica* at Porto Velho, Brazil. Ten out of the fourteen were apparently cured and four uncured. Of the ten cured, six were given a single treatment only, one had a second treatment after a day's interval, and three had three treatments. The treatment laid down by the authors for adults is

(1) Magnesium sulphate from ½ to 1 ounce at 6 a.m. ; (2) Oil of Chenopodium 16 minims in gelatine capsules at 8 a.m., 10 a.m., and 12 noon ; (3) Castor oil 1 ounce containing Chloroform 50 minims, at 2 p.m. Emphasis is laid upon the necessity for preliminary purgation with magnesium sulphate.

B. B.

Unna (P. G.) & Tielemann (Eleonore Th.). **Zur Chemie der Amöben.** *Cent. f. Bakt.* 1 Abt. Orig. 1917. Aug. 30. Vol. 80. No. 1–3. pp. 66–89. With 1 coloured plate.

The authors have made a study of the effects of various reagents upon *Amoeba limax* from hay infusions. The methods are detailed. The reagents chiefly employed were (1) distilled water at 100° C. ; (2) 2 per cent. sodium chloride solution at 100° C. ; (3) saturated solution of Ammonium sulphate at 100° C. ; (4) absolute alcohol at 55° C. ; (5) ether at 35° C. ; (6) acetone at 56·3° C. ; (7) equal parts of absolute alcohol and benzin.

Films prepared on slides were fixed in osmic acid vapour and then dried in air, and treated with one of the reagents for the following periods : two minutes treatment with nos. 1, 2 or 3, fifteen minutes with nos. 4, 5 or 6, twelve hours in the case of no. 7. Then wash in water and stain examples with haematein, polychrome methylene blue, and Giemsa's solution. A table is given showing the findings obtained by a comparison of the results of exposure to the various reagents followed by various stains. The presence of at least six different albuminous substances can thus be demonstrated. The authors draw comparisons between the substances which can be demonstrated in metazoan cells and those which they found in *Amoeba limax.*

B. B.

Haberfeld (Walther). **Contribuição ao estudo dos kystos e da vitalidade das amoebas pathogenicas.**—*Ann. Paulist. Med. e Cirurg.* 1917. June. Vol. 8. Year 5. No. 6. pp. 125–129. With 15 figs.

This paper deals with the diagnosis of pathogenic amoebae by means of their cysts. The last portion is devoted to the consideration of the vitality of amoebae at different temperatures. The fact that amoebae die more rapidly when kept at 37° C. than at room temperature or lower the author explains by the chemical decomposition of the faeces and autolysis of tissue cells contained in it which proceed more rapidly at the higher temperature. Toxic products are released which react to the detriment of amoebae.

B. B.

Taiwan Igakukai Zasshi. (*Journal of the Formosa Medical Society*).—[**Amoeba Cysts, an Easy Method of Staining.**] 1917. Apr. 28. No. 174. pp. 249–255. [From Review by R. G. Mills.]

Various aniline dyes were tried and then, more fully, methylene blue and Congo red which were a little better than the rest. The living

cysts were not noticeably affected, but those killed by heat or alcohol took the stains more readily. Iodine, however, in saturated solution in 70–80 per cent. alcohol was found to be the best.

The method advised was to secure the cysts from the faeces by filtering through gauze, centrifuging and spreading the sediment upon a slide with a slight excess of the iodine solution. These were thoroughly mixed and a cover glass dropped on. The field of vision becomes yellowish or light green and the cysts will be golden yellow with slightly darker nuclei. Starch granules are stained purplish and other matters which would be liable to cause confusion are lacking in good detail. The eggs of the various parasites are rendered quite plain by this method.

B. B.

Mathis (C.) & Mercier (L.). **Le soi-disant *chromidium* des kystes des entamibes intestinales de l'homme.**—*Bull. Soc. Path. Exot.* 1917. July. Vol. 10. No. 7. pp. 536–538.

The term chromidium should not be applied to the siderophile bodies which exist in amoebic cysts, and which the authors consider are not derivatives of the nucleus but formed entirely by the cytoplasm. The siderophile rods in cysts of *E. dysenteriae* are different from the siderophile masses in cysts of *E. coli*, in mode of formation, geometric form, and compactness of structure. The presence of siderophile rods in *E. dysenteriae* cysts and their absence in *E. coli* cysts is a diagnostic point just as the size of the cysts and the number of their nuclei.

B. B.

da Cunha (A. Marques) & da Fonseca (O.). **Sobre uma nova entaméba. *Entameba serpentis*, n. sp.**—*Brazil Medico.* 1917. Aug. 18. Vol. 31. No. 33. p. 279.

This is a short preliminary note on an entamoeba found in *Drymobius bifossatus*. Two forms large and small are described between which intermediate forms exist. The authors call the parasite *E. serpentis*.

B. B.

Goodey (T.) & Wellings (A. W.). **Observations on *Entamoeba gingivalis*, from the Human Mouth, with a Note on the Trichomonad Flagellate *Tetratrichomonas buccalis*, n. sp.**—*Parasitology.* 1917. July. Vol. 9. No. 4. pp. 537–559. With 3 plates.

The authors set out to investigate the part played by *Entamoeba gingivalis* in causing pyorrhoea alveolaris. Their methods of examination, fixing and staining are described and the results obtained by them agree in the main with those of previous observers. The most important section of the paper is that in which is discussed the food of the parasite. Bacteria and larger bodies are found in the amoebae and as to the nature of these larger inclusions various authors differ. As a result of their investigations Goodey and Wellings conclude that these inclusions are almost entirely derived from salivary corpuscles. They conclude that the amoeba is not pathogenic, but on the contrary is a benign parasite and a useful scavenger. It may be found in healthy and in unhealthy mouths. Explanations as to why it is not found invariably are suggested.

The second part of the paper deals with the morphology of the trichomonas of the mouth, and the authors place it in the subgenus Tetratrichomonas with the name *Tetratrichomonas buccalis*, n. sp.

B. B.

Nowlin (Nadine). *Endamoeba buccalis.* **I. Its Multiplication and Periodicity.**—*Jl. Parasit.* 1917. June. Vol. 3. No. 4. pp. 143–149. With 1 fig.

By following one case for a long period (five months) the author obtained some evidence that the amoebae at certain periods become greatly reduced in number. This reduction is considered to be due to alteration in the saliva due to constitutional derangements. Encystment of the parasite was found frequently during these periods, and occurred chiefly in the periosteum. The author is commencing the study of tonsil sections in the hope of further elucidating the subject of tissue invasion by *Endamoeba buccalis.*

B. B.

Marty (L.). **Emétine et *Amoeba coli.* Observation.**—*Bull. Soc. Path. Exot.* 1917. July. Vol. 10. No. 7. pp. 539–540.

A case from the Congo which presented in the faeces amoebae containing red corpuscles, amoebae not containing red cells, Lamblia, and spirochaetes, was treated by subcutaneous injections of emetine. The amoeba not containing red cells, *Lamblia intestinalis* and spirochaetes were not influenced by the injections. The amoebae containing red cells had disappeared.

B. B.

Mathis (C.) & Mercier (L.). **Existe-t-il des races d'*Entamoeba dysenteriae*?**—*C. R. Soc. Biol.* 1917. Oct. 20. Vol. 80. No. 16. pp. 791–793.

The authors question the propriety of speaking of "strains" of *Entamoeba dysenteriae*; they consider the evidence of the existence of such strains doubtful and insufficient. They suggest certain lines of investigation to be followed before concluding that different strains exist

B. B.

Moreau (Laurent). **Sur un cas d'amibiase hépatique autochtone. Abcès du lobe gauche. Intervention chirurgicale. Guérison.**—*Bull. Soc. Path. Exot.* 1917. Oct. Vol. 10. No. 8. pp. 696–698.

A liver abscess developed in a soldier who had not left France. From the appearance of the pus and the symptoms the author concludes it was due to amoebic infection. Amoebae were not found in the pus. [No examination of the faeces is recorded.]

B. B.

de Mello (Froilano). **O sindroma febril nas amebiases hepaticas atenuadas.** [Fever in Mild Cases of Amoebic Affection of the Liver.]—*Bol. Ger. Med. e Farmacia.* Nova-Gôa. 1917. Apr. Vol. 4. No. 4. pp. 135–139.

Notes of a very ordinary case of amoebic abscess of the liver in which the temperature showed marked irregularities. The author points out that Grall (*Bull. Soc. Path. Exot.*, 1917, Vol. 10, No. 1) has lately drawn attention to the same thing.

J. B. Nias.

Razetti (L.). **Tres nuevas aplicaciones del método de Rogers en el tratamiento de la amibiosis hepática.** [Three Cases of Liver Abscess treated on Rogers' Method.]—*Gac. Med. de Caracas.* 1917. June 15. Vol. 24. No. 11. p. 93.

Three cases of liver abscess treated by aspiration of the abscess cavity followed by injection of a solution of emetine in salt solution, with simultaneous administration of emetine subcutaneously.

The author is loud in his praise of this method for avoiding an open operation. [For previous cases see this *Bulletin.*]

J. B. N.

de Mello (Froilano). **Notas clinicas sobre um caso de amebiase entero-hepatica.** [Notes of a Case of Amoebic Dysentery.]—*Bol. Ger. Med. e Farmacia.* Nova-Gôa. 1917. Mar. Vol. 4. No. 3. pp. 102–105.

Notes of a case of dysentery which died in hospital after having been treated on and off in an irregular manner with emetine by different practitioners.

J. B. N.

Mattéi (Charles) & Bloch (Marcel). **Aspects des selles dans les formes atypiques de la dysenterie amibienne.**—*Presse Méd.* 1917. July 26. Vol. 25. No. 42. pp. 436–437.

This is a description of faeces in terms of food stuffs. The range of resemblance is considerable and extends from tapioca to scrambled eggs, from marine plants to vermicelli, from egg soup to brown caramel.

B. B.

Haberfeld (Walther). **Estudos sobre as difficuldades do diagnostico das amoebas pathogenicas enkystadas.**—*Ann. Paulist. Med. e Cirurg.* 1917. Feb. Vol. 8. Year 5. No. 2. pp. 35–38. With 1 fig.

The author complains that a colleague gave a diagnosis of "numerous pathogenic amoebic cysts" present after an examination of lightening rapidity, and that two other colleagues returned a diagnosis of amoebae and cysts in a case where, as a matter of fact, there was no amoebae nor cysts, but only numerous degenerating leucocytes.

B. B.

## Bacillary Dysentery.

Loygue (G.) & Haguenau (J.). **Sur une épidémie de dysenterie bacillaire observée dans la région de la Somme.**—*Presse Méd.* 1917. July 23. Vol. 25. No. 41. pp. 421–424. With 1 chart.

This paper deals with an epidemic of 449 cases of bacillary dysentery observed to the south of the Somme in a section of the front occupied by colonial troops from August 10th to November 10th 1916. Shiga's bacillus was isolated in 36 cases, Flexner in 5 and Hiss in 20. In a smaller number of cases three groups of organisms with the groups given in the following table were isolated :—

TABLE I.

| | Motility. | Gram. | Bouillon. | Gelatine. | Agar. | Litmus milk. | Neutral red. | Indol. | Lactose. | Glucose. | Levulose. | Mannite. | Maltose. | Galactose. | Saccharose. | Lead. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type I .. | 0 | — | Slight turbidity. | No liquefaction. | Colonies a little thicker than Flexner | Slightly reddened. | + | + | — | + | + | + | + | + | + | — |
| Type II .. | 0 | — | do. | do. | do. | do. | + | + | — | + | + | + | + | — | — | — |
| Type III .. | + | — | do. | do. | do. | do. | + | + | — | + | + | + | ++ | — | ++ | + |

Media not fragmented.

Media fragmented.

Agglutination was tested in 325 cases with 190 positive results of which 175 were positive to Shiga and 15 to Flexner. In 10 cases complement fixation was performed, with negative results in all cases. Mixed infections with the typhoid group were also observed, *B. paratyphosus* A being recovered from the stools 4 times and *B. paratyphosus* B twice, whilst agglutination was positive with Eberth's bacillus in 3 cases and with *para* A once.

F. E. Taylor.

Rathery (F.). **A propos du séro-diagnostic de la dysenterie.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. Feb. 22. 3 Ser. Vol. 33. No. 5–6. pp. 315–317.

A note of a polemical nature but of some interest as the author asserts that he has done close on 20,000 agglutination tests with patients' sera against *B. dysenteriae* Flexner always using *the same strain* of bacillus, and has never found a titre of 1 : 100 except in cases which could be proved to be true bacillary dysentery. The author prefers the microscopic to the macroscopic test for agglutinations, especially in the case of *B. dysenteriae* Flexner.

E. E. Atkin.

Fuerst (Th.). **Die bakteriologische Kontrolle bei der Bekämpfung der Ruhr.** [The Bacteriological Control of the Campaign against Dysentery.]—*Münch. Med. Woch.* 1917. May 22. Vol. 64. No. 21. pp. 693–695.

The author states that the general opinion of the Army is that dysentery is a disease which can be diagnosed clinically without the aid of bacteriological investigations. This opinion is, he considers, detrimental to the prevention of the malady, since carriers play a great part in the spread of dysentery, and for the detection of carriers bacteriological investigations are absolutely essential. Fuerst gives the results of his two years' experience of the bacteriological investigation of dysenteric and suspected stools, and points out that more especially in the first year the material sent for investigation was seldom in a fresh condition.

Bacilli of the dysentery group (Flexner, Shiga or Y) were found in six per cent. of the cases in the summer of 1915 and in five per cent. in the summer of 1916. He considers that this low percentage of positive findings was due to the medical treatment which most of the patients had already received, especially the use of tannic acid preparations, which renders the isolation of the germs much more difficult.

It was also noticed that the epidemics commenced with bacilli of the Flexner type, whilst later the Shiga-Kruse type predominated.

Complications, and especially arthritic complications, were usually due to the Shiga-Kruse type, as proved by the agglutination reactions given by the blood of such patients.

Finally the author calls attention, especially in convalescents, to strains of *B. coli* which show the so-called "para-agglutination," being agglutinated by dysentery serum in practically the same dilutions as the true dysentery bacilli. This para-agglutination can be distinguished from a group agglutination by the employment of Castellani's method and by the fact that after repeated cultivation on artificial media the agglutinability disappears.

F. E. T.

KIMMERLE. **Beobachtungen während einer Ruhrepidemie.** [Observations during an Epidemic of Dysentery.]—*Arch. f. Schiffs- u. Trop-Hyg.* 1917. June. Vol. 21. No. 11–12. pp. 188–199. With 1 chart.

In the summer of 1915 the author observed amongst German troops a small epidemic of dysentery due to the Y bacillus and in the autumn of 1916 a somewhat larger outbreak also due to the same bacillus, together with a single case of Shiga-Kruse dysentery. With regard to the spread of the disease, the water supply was beyond suspicion, and attention was called to the danger of "carriers," to infection from the civil population and to the occurrence of cases so slightly ill that they did not report sick and so come under the control of the physician. Of the 140 cases observed dysentery bacilli were obtained from cultures of the stools in 50, *i.e.* 35·7 per cent. This small percentage was probably due to the difficulty of obtaining fresh material for examination since SELIGMAN, whose laboratory was situated much nearer to the front, found 70 per cent. positive. Agglutination was found in concentrations of 1 in 80 to 1 in 320. Treatment consisted of calomel, castor oil and Bolus alba. There were no deaths, only one recurrence, and only eleven patients remained longer than twenty days under treatment.

F. E. T.

BREINL (Friedrich). **Zur Frage der bakteriologischen Ruhrdiagnose.** [The Bacteriological Diagnosis of Dysentery.]—*Wien. Klin. Woch.* 1917. May 31. Vol. 30. No. 22. pp. 689–691.

The author found that dysentery bacilli could usually be found without difficulty in cases which were clinically recognisable as dysentery provided that the material for bacteriological examination was obtained by washing out the intestine and making cultures as soon as possible, preferably at the bedside. When the material for investigation has to be sent any distance it should be maintained at a low temperature, otherwise positive results are seldom obtained after twenty-four hours.

F. E. T.

JACOB (L.). **Klinische Beobachtungen bei Bazillenruhr.** [Clinical Observations on Bacillary Dysentery.]—*Zeitschr. f. Hyg. u. Infektionskr.* 1917 May 3. Vol. 83. No. 3. pp. 467–488. With 15 charts.

The author, a privat-dozent of Würzburg, made his observations on a large number of cases of dysentery in two military hospitals. The diagnosis was established by bacteriological examination and 45 per cent. of positive results was obtained. Infection with the Shiga-Kruse bacillus gave rise to more severe conditions in a larger percentage of cases than did infection with the Flexner bacillus, although the pseudo-dysentery bacilli (Flexner) sometimes produced very severe and even fatal cases, whilst Shiga-Kruse bacilli sometimes produced quite mild cases. The clinical picture was very uniform, the slight and the severe cases being recognisable as such even in the early stages of the disease, as the condition of the temperature and pulse were characteristic for each group. Mixed infections and

complications were seldom observed. The majority of the recommended medicaments which were administered did not appear to influence the intestinal symptoms, with the exception of atropine which often promptly relieved severe abdominal pains. Opium also exercised a beneficial effect on the pain and diarrhoea and should therefore not be withheld. An increase of toxicity and therewith a general deterioration of the general condition was not observed after the use of this drug. Calomel, even when given early, did not shorten or mitigate the course of the disease.

F. E. T.

Nègre (L.). **Recherches sur les bacilles pseudo-dysentériques au point de vue de leurs affinités avec les bacilles dysentériques et le *Bacterium coli*.—*Ann. Inst. Pasteur.*** 1917. Apr. Vol. 31. No. 4. pp. 172–186.

The pseudo-dysenteric group, according to the author, is one which comprises bacilli, both motile and non-motile, that resemble the dysentery bacilli of the Shiga and Flexner type, but differ from them in certain characters.

From a study of their cultural characters, agglutinating properties and complement fixing powers it is concluded that the pseudo-dysentery bacilli constitute a group which is intermediate between *B. coli* and the true dysentery bacilli.

F. E. T.

Gibson (H. Graeme). **A New Method of Preparation of a Vaccine against Bacillary Dysentery which abolishes Severe Local Reaction. Also Experiments with this Vaccine on Animals and Man.—*Jl. Roy. Army Med. Corps.*** 1917. June. Vol. 28. No. 6. pp. 615–657. With 5 figs.

This is a rather long article and an elaborate analysis of it is not possible here. The main obstacle to the administration of Shiga dysentery vaccines is the intense local reaction which they cause. Several different kinds of vaccine were tried, such as an emulsion killed by eusol, an emulsion killed by carbolic acid and sensitised with anti-dysenteric serum, but the one that gave the best results was one that was treated, not with whole serum, but with anti-dysenteric serum which had previously been absorbed with Shiga bacilli. The only criterion brought forward of its usefulness in man was the production of antibodies—agglutinins, bactericidins and antitoxins—but as it promises well it is now undergoing an extensive trial in the battle-field.

Incidentally the relapse of a case of trench nephritis is recorded, with the admonition that this disease must therefore be taken as a contra-indication against inoculation.

E. E. A.

Ditthorn (Fritz) & Loewenthal (Waldemar). **Ein neuer multivalenter Ruhrschutzimpfstoff.** [A New Multivalent Protective Injection for Dysentery.]—*Deut. Med. Woch.* 1917. Aug. 2. Vol. 43. No. 31. pp. 967–968.

Although they admit the excellence of sensitised vaccines in bacillary dysentery Ditthorn and Loewenthal claim to have prepared a

dysenteric vaccine in which sensitisation is replaced by a method of physico-chemical treatment of the bacilli employed. The actual technique employed is withheld; the only information given is that the bacilli are previously killed with phenol, and they claim that the antigenic properties of the virus are in nowise deteriorated by the treatment.

Following the injection of the vaccine in man there is sometimes no reaction and sometimes pain and swelling at the seat of inoculation are complained of. The serum of injected persons may contain no agglutinins or may have an agglutination titre of 1 in 200 for dysentery bacilli. The authors attach little importance to the presence or absence of agglutinins, for they do not consider that the agglutinating powers serve to indicate the degree of immunity acquired. Three injections of the vaccine are given, namely ·5 cc. ·8 cc. and 1 cc. injected deeply into the subcutaneous tissues, thus avoiding much cutaneous reaction. In cases where the local reaction is excessive, the injection of a little anti-dysenteric serum is recommended.

F. E. T.

Schultz (Werner). **Ueber eine neue Form von Dysenterieantigen.** [A New Form of Dysentery Antigen.]—*Deut. Med. Woch.* 1917. Aug. 2. Vol. 43. No. 31. pp. 968–970.

The anti-dysenteric vaccine of Ditthorn and Loewenthal [see above] injected into man in doses of 1/64 to 1/11 of a loopful gives rise to general phenomena hardly appreciable. Some local reaction (redness, pain and infiltration) is always observed, but is easily supportable.

F. E. T.

Margolis (Alexander). **Die Behandlung der Bazillenruhr mit Vakzine.** [Vaccine Treatment of Bacillary Dysentery.]—*Deut. Med. Woch.* 1917. June 21. Vol. 43. No. 25. pp. 783–785. With 5 charts & 1 diagram.

A dysentery epidemic occurred at Lodz in the summer of 1916. The cases were mostly of the Flexner-Y type. There were 33 severe cases, which were divided into 2 groups, one being treated with vaccine and the other only with astringents, bowel washes, etc., to serve as a control. The very worst cases were amongst those which received vaccine treatment. The effect on the mortality was decisive; 13 of the uninoculated died but only 8 of the inoculated. The duration of the disease was also curtailed. Four different kinds of vaccine were employed, namely, unsensitised killed, sensitised killed and living, and a killed autogenous, but no details are given as to their relations to the mortality figures given above.

E. E. A.

Ross (Philip H.) & Kauntze (W. H.). **The Use of Polyvalent Vaccines in Dysentery.** [Correspondence.]—*Lancet.* 1917. June 23. pp. 965–966.

The vaccine used by the authors was made from organisms recovered from African natives suffering from dysentery in the Carrier Corps depot at Nairobi. It consists of *B. shiga*, 1 part; a motile bacillus

with the sugar reactions of *B. shiga*, 1 part; a bacillus of the Flexner type, 1 part; three different strains of B. Morgan type, 3 parts. Carbolised cultures in peptone broth are mixed in the above proportions, tested for sterility after two days and issued as required. The results on administration to patients suffering from dysentery are stated to have been most promising, and complete statistics are promised at a later date.

F. E. T.

i. Forbát (Alexander). **Die spezifische Vakzinetherapie bei bazillärer Ruhr.** [The Specific Vaccine Therapy of Bacillary Dysentery.]—*Deut. Med. Woch.* 1917. July 26. Vol. 43. No. 30. p. 946.

ii. Skalski & Sterling. **Die spezifische Vakzinetherapie bei bazillärer Ruhr.** [The Specific Vaccine Therapy of Bacillary Dysentery.]—*Ibid.*

The views of Skalski and Sterling on the value of specific vaccine therapy in bacterial dysentery are to be found in this *Bulletin*, Vol. 10, p. 140. The above articles are devoted to a polemic on this subject in which no new facts are brought to light.

F. E. T.

### Flagellate Dysentry.

de Mello (Froilano). **Dous casos de flagelose intestinal.** [Two Cases of Intestinal Flagellosis.]—*Bol. Ger. Med. e Farmacia.* Nova-Gôa. 1917. Apr. Vol. 4. No. 4. pp. 139–143.

Notes of two cases of chronic diarrhoea, one in a native soldier and the other in a European sailor, in which examination of the stools did not reveal any other organism than flagellates to which the symptoms could be attributed.

Case I.—The patient had suffered for some time from a profuse diarrhoea without tenesmus or passage of blood. Microscopic examination of the stools showed no amoebae, and cultures for dysentery bacilli were negative. The microscope revealed, however, the presence of a very large number of flagellate organisms, from 50 to 85$\mu$ in length, symmetrical in shape and having a flagellum at each end of the body. A single nucleus, an axostyle and a vacuole situated near the anterior end of the body were present. Gradually the organisms lost their movements and became encysted, the flagella disappearing. In normal salt solution they remained alive for 3 or 4 days. Treatment of the diarrhoea with emetin and bismuth proved quite ineffective, but a partial success was obtained with Castellani's prescription of methylene blue, of which 5 centigrammes was given by the mouth, and half a gramme in two clysters every day. The patient eventually left the hospital temporarily cured but, when seen 3 months afterwards, still complained of occasional attacks of diarrhoea. The author is inclined to classify the organism found in this case as a *Cercomonas*, but not as either *C. hominis* or *C. parva*, on account of its size.

Case II.—The patient had previously suffered from amoebic dysentery, which had been relieved with Dover's powder. The stools showed encysted amoebae and numerous flagellates, identified as

*Trichomonas hominis.* Treatment of the diarrhoea with methylene blue and bismuth had little effect and the patient was advised to return to Europe.

J. B. Nias.

Chace (Arthur F.) & Tasker (Arthur N.). **The Diagnosis and Treatment of the Flagellate Diarrheas.**—*Jl. Amer. Med. Assoc.* 1917. May 26. Vol. 68. No. 21. pp. 1528–1531. With 1 fig.

The authors recommend for flagellate diarrhoea a treatment consisting of oral administration of 2 grains methylthionin hydrochloride (methylene blue) every 3 hours. In addition one or two enemata high up the colon are given daily. The amount injected is 500 cc. and should be retained 15 minutes. The strength of the aqueous solution used is between 1-500 and 1-200. They quote cases in which this treatment produced good effects. In one case the treatment was continued for 16 days. This patient, who had a heavy infection with *Cercomonas hominis*, was treated in March 1915. In June of the same year he was again seen and had gained 17 lbs. in weight.

B. Blacklock.

McNeil (H. L.). **A New Method of treating Flagellate Infection of the Intestines.**—*Southern Med. Jl.* 1917. July. Vol. 10. No. 7. pp. 544–546.

The author having found the usually recommended methods of treating flagellate infections unreliable has adopted the procedure of direct irrigation of the duodenum. The solution used has the following formula :—

| | | | |
|---|---|---|---|
| Methylene Blue (med. pur.) | .. | grs. | 5 |
| Quinin Sulph. .. .. | .. | grs. | 20 |
| Hydrochloric acid (conc.) ... | .. | mms. | 30 |
| Aq. Dest. qs. ad .. .. | .. | O | 1 |

Any form of duodenal tube may be used, but preferably a form having a small tip. The solution is run in warm, the time occupied being 10 minutes, and the injections are given daily for three days, in the morning, the last two injections for adults being of double the amount.

In the evening of each day an enema of 1-5000 methylene blue is given high up the colon. Before treatment the patient is kept on liquid diet for two days and a saline purgative is given the night before the first injection.

Four cases, of which three had infection with Trichomonas and one with Lamblia, were apparently undoubtedly cured by this method, that is, at the expiration of a month the faeces were examined after administering a purgative and no parasites were found.

B. B.

da Silva (Ribeiro). **Trichomonose intestinal : cura pelos enteroclysmos iodicos. Myxedema consecutivo : cura pela thyroidina.**—*Brazil Medico.* 1917. June 16. Vol. 31. No. 24. pp. 201–203.

A male patient of 39 years of age who had suffered from symptoms of dysentery for over a year was found to be heavily infected with

Trichomonas, and no other cause of his symptoms could be discovered. Treatment was undertaken by means of a daily injection of a litre of 1 per thousand of iodine solution. The result as regards the symptoms was good; in twelve days the patient was free from pain, had one motion a day instead of five or six which he previously had, and frequent examinations of the faeces proved negative as regards Trichomonas. A few days later, however, considerable oedema of the lower limbs set in and also slight oedema of the face. The author notes that before treatment there was no sign of cutaneous infiltration. Thyroid insufficiency brought about by excess of iodine absorbed was considered the probable explanation, and the author discusses at some length the views held on this subject. Treatment of the secondary condition by means of thyroid extract rapidly produced good results so that in a month hardly a trace of swelling was observed in the lower limbs and none in the face.

B. B.

Chalmers (Albert J.) & Pekkola (Waino). *Enteromonas hominis* da **Fonseca 1915 in a British Officer.**—*Bull. Soc. Path. Exot.* 1917. Oct. Vol. 10. No. 8. pp. 756–761. With 3 figs.

The patient referred to in this paper became ill in February 1917 when stationed at Omdurman; the symptoms were loss of weight, lassitude, and periodical attacks of abdominal pain accompanied by diarrhoea. The attacks became more severe until July when he was examined. There were found in the course of microscopical examination of the faeces a number of specimens of *Enteromonas hominis*, besides bacilli and *Blastocystis hominis*; no amoebae or other parasites were seen. Serum agglutination positive with *B. typhosus* up to 1-30 only; all other bacteriological examinations gave a negative result; the patient had been inoculated against *B. typhosus* on two occasions. The parasite is briefly described and reference is made to the previous descriptions of the parasite by the authors.* Treatment consisted of calomel at night in small doses and salines in the morning and the administration of 2 grammes of salol in 24 hours, the patient being kept on fluid diet. The parasites and the symptoms from which the patient suffered disappeared rapidly under this treatment. An attempt to infect a kitten by rectal injection failed.

B. B.

Villa Alvarez (Alejandro). **Trichomonosis intestinal.**—*Repertorio de Med. y Cirug.* 1917. May, June. Vol. 8. Nos. 8, 9. (Nos. 92, 93). pp. 346–360; 397–411.

**The author enters into a prolonged discussion of his belief in the pathogenicity of Trichomonas. He quotes at length from criticisms directed against his views and gives his reasons for adhering to his opinion**

B. B.

* *Trans. Soc. Trop. Med. & Hyg* 1917. Dec. Vol. 11. No. 2. pp. 93–103. With 1 plate & 1 text-fig.

### Mixed and Unclassed Dysentery.

Medical Research Committee. **National Health Insurance. Reports upon Investigations in the United Kingdom of Dysentery Cases received from the Eastern Mediterranean. III. Report upon Recovered Cases of Intestinal Disease in the Royal Naval Hospital, Haslar, 1915-16** [by P. Fildes]. **IV. Report upon Combined Clinical and Bacteriological Studies of Dysentery Cases from the Mediterranean** [by S. R. Douglas].—Special Report Series No. 6. 82 pp. 1917. London: H. M. Stationery Office. [Price 1*s.* 6*d.* net.]

These two Reports, published together, are in continuation of those which have already appeared in this Series upon dysentery patients and convalescents from the Mediterranean in 1915 and 1916. [For remarks on No. 5 of this series see this *Bulletin*, Vol. 10, p. 138.]

The first Report gives an account of the work done by Dr. P. Fildes at the Royal Naval Hospital, Haslar, on patients invalided at some earlier period from service in the Mediterranean on account of intestinal disease, a far larger proportion of these naval cases being convalescent than in the military series described in Report No. 5. About 13 per cent. of these naval convalescents invalided with intestinal infections could be assigned to the typhoid group, whilst in the military series in the former Report typhoid, as distinct from paratyphoid, infections played an insignificant part in the Mediterranean epidemic. This difference appears to be due to differences in the conditions of inoculation among the naval and military cases respectively. 10 per cent. of Dr. Fildes's cases had not been inoculated. Inoculation was confined to the Royal Naval Division, the great majority of the men in the ships not being inoculated, though they were often landed in the Near East and thus exposed to infection. The incidence of typhoid infections among the uninoculated men who had suffered from some form of infective enteritis was 25 per cent.; whilst among the enteritis convalescents who had been inoculated the incidence was only 8·8 per cent. Dr. Fildes's results thus exhibit in the case of the Navy the practical value of anti-typhoid inoculation, which has been so abundantly demonstrated in the Army.

The second Report by Capt. S. R. Douglas assisted by Capt. L. Colebrook and Capt. Parry Morgan gives an account of the intensive clinical and bacteriological investigation of 29 acute cases who had contracted dysentery in Gallipoli between July and November, in which a systematic search was made for many possible causes of the disease beyond the classical types of infection.

Only 3 of the 29 cases were due to infection with classical dysentery bacilli, but other bacterial types foreign to the normal intestine occurred in much higher proportion, e.g., Morgan's bacillus, *B. pyocyaneus*, and bacilli of other groups, which were systematically investigated, and their pathogenicity established. It would appear that many of these less familiar bacteria are not only capable of producing intestinal disease but may have actually played an important part in the Gallipoli epidemic. Satisfactory results were obtained in the treatment of these infections by the use of proper vaccines and observations were made upon the intermittence of the passage of these organisms by "carriers." It was also shown that

Browning and Gilmour's "brilliant green" method for the isolation of particular bacteria has a wider application in practice than they originally claimed for it. F. E. Taylor

Ledingham (J. C. G.) & Wenyon (C. M.). **Dysentery at Gallipoli.** [Correspondence.]—*Brit. Med. Jl.* 1917. July 7. p. 29.

The aim of this note is to counter the view which has gained ground in this country that the amoebic variety of dysentery was the predominant type on the Eastern fronts, including Mesopotamia. As a matter of fact not more than 20–25 per cent. of the acute dysenterics were amoebic, the rest of course being bacillary. The examination of convalescents returning to this country does not give a true picture of the state of affairs on the respective fronts and this is to some extent the cause of the misconception. E. E. Atkin.

Bahr (Philip). **Dysentery at Gallipoli.** [Correspondence.] — *Brit. Med. Jl.* 1917. Sept. 22. p. 401.
Bartlett (G. B.). *Ibid.* pp. 401–402.
Magner (W.). *Ibid.* Oct. 20. p. 539.

Bahr, working first at Mudros, and then in Egypt, supports the statement of Ledingham and Wenyon on the overwhelming preponderance of the bacillary form of dysentery in the Eastern theatres of war, whilst Bartlett and Magner, working in Egypt believe that the large majority of the cases were of amoebic origin. From his experience of dysentery among Turkish prisoners of war from Sinai and the Hedjaz, Bahr concludes that amoebic dysentery is a comparatively rare disease in the inhabitants of the Middle East when subjected to similar conditions as our troops in Gallipoli. Bahr condemns, whilst Bartlett and Magner advocate, the routine use of emetine in the treatment of acute dysentery from Gallipoli and claim that until exact knowledge is obtained concerning the infecting organism or organisms in acute dysentery the routine use of emetine constitutes the only rational treatment. Bahr, on the other hand, considers the indiscriminate hypodermic injection of emetine regardless of laboratory diagnosis is unsound, such treatment having a prejudicial effect on cases of acute bacillary dysentery, which require specific treatment with large doses of polyvalent anti-dysenteric serum and intravenous injection of salines. Where the diagnosis is uncertain and a rapid action is necessary Bahr considers that there can be no harm in simultaneous use of emetine, anti-serum and saline injections.

F. E. T.

Cecikas (J.). **Masked Dysentery.**—*Grèce Méd.* 1917. Apr. 1–15. Vol. 19. No. 7–8. pp. 13–16.

The author considers that the term enteritis is employed to include a group of diseases of the most heterogenous character. By the examination of the patient's sera by the agglutination test, and by the bacteriological examination of the stools a certain number of these will be found to be cases of dysentery. The details are given of several cases of enteritis which in this way were proved to be cases of dysentery.

F. E. T.

Barratt (J. O. Wakelin). **A Search for Dysentery Carriers among Soldiers coming from Gallipoli and Egypt.**—*Brit. Med. Jl.* 1916. Nov. 4. pp. 617–619.

This investigation was undertaken to determine the extent to which men coming from countries in which dysentery was endemic are likely to be dysentery carriers. The faeces of fifty soldiers who had reached France after service in Gallipoli and Egypt were examined for entamoebae and dysentery bacilli. The soldiers were taken at random, without selection, in the medical wards of the hospital. Seventeen had not had a previous attack of dysentery; the remaining thirty-three had suffered from previous attacks. Nine were admitted with a diagnosis of dysentery, and in one of these it was stated that *B. dysenteriae* (Flexner) had been isolated from the stools. In no case could entamoebae, motile or encysted, be found, though encysted lambliae were present in three cases. In no case could an agglutinable *B. dysenteriae* Shiga or Flexner be obtained, though in one case an inagglutinable bacillus corresponding in cultural characters to *B. dysenteriae* (Shiga) was found, and in one case a bacillus probably identical with *B. dysenteriae* (Strong) was isolated. Other pathogenic organisms discovered incidentally included *B. typhosus*, *B. paratyphosus* A and *B. paratyphosus* B in one case each, and bacilli allied to Morgan's bacillus No. 1 in two cases. Only three dysentery carriers could be recognised among the fifty men examined, together with two carriers who did not belong to the dysentery group. These investigations show that when soldiers who have had dysentery are admitted into a base hospital the condition of their intestinal tract is ordinarily normal, or rapidly becomes so, any dysenteric lesions quickly subsiding. They also emphasise the danger of troops who are dysenteric subjects bringing dysentery into this country by the agency of carriers. The author considers that the risk would presumably be greater among men leading a more arduous existence, conducing to a recrudescence of their malady, such as obtains in camp life at the front, and it appears desirable that further examinations should be made under the latter conditions.

F. E. T.

Fischer (Walther) & Dold (Hermann). **Gleichzeitige Infektion mit Dysenterie-bazillen und Dysenterieamöben.** [Simultaneous Infection with Dysentery Bacilli and Dysentery Amoebae.]—*Deut. Med. Woch.* 1917. Oct. 4. Vol. 43. No. 40. pp. 1258–1260.

Without making a systematic investigation into the subject, the authors, working in Shanghai, were able to establish the simultaneous infection with dysentery bacilli and amoebae in 7 cases, the Shiga-Kruse bacillus being present in four cases, the Flexner bacillus in two and the Y bacillus in one. They therefore conclude that in districts where both diseases are frequent simultaneous active infection with dysentery bacilli and amoebae not infrequently occurs. They consider that an abnormal leucocyte content in the stool of a case of amoebic dysentery constitutes a useful indication of a simultaneous bacillary infection.

F. E. T.

Rose (F. G.). **Infantile Enteritis in British Guiana.**—*Brit. Guiana Med. Ann.* 1915. pp. 39–41.

Infantile enteritis accounts for a large proportion of the deaths of children under two years of age occurring in the Public Hospital, Georgetown. The patients, usually infants under one year, are generally admitted in a condition of complete collapse, and as a rule death ensues in a day or two from exhaustion or toxaemia. Post mortem the enlarged spleen or inflamed lymph-follicles may simulate typhoid, but typhoid and paratyphoid bacilli cannot be obtained on cultivation.

On bacteriological examination of the faeces, Flexner's bacillus was found four times, the Y bacillus twice, Morgan's No. 1 bacillus once, *Streptococcus pyogenes* five times, and a bacillus of the colon type, of very high virulence, was the only pathogenic organism isolated in thirteen cases.

F. E. T.

Rangel Pestana (Bruno). **Consideracões acerca de alguns protozoario e outros parasitas encontrados em fezes humanas (Resultado de 477 exames de fezes).** [On some Protozoa and other Parasites found in Human Faeces. Results of 477 Examinations.]—*Ann. Paulist. Med. e Cirurg.* 1917. May. Vol. 8. Year 5. No. 5. pp. 101–113. With 1 plate.

During the past year the author examined the faeces of 477 persons of whom some were and others were not suffering from intestinal troubles. The results of microscopical examinations were 153 positive, 324 negative. The following table shows the number of cases in which infection with various parasites was discovered; it is reproduced from the author's paper:—

| *Parasite.* | *Cases.* |
|---|---|
| *Blastocystis hominis* (Brumpt 1912) | 24 |
| *Endameba dysenteriae* (Councilman & Lafleur 1891) | 29 |
| ,, ,, & Blastocystis | 3 |
| ,, ,, ,, and Giardia | 1 |
| ,, ,, & Flagellates (sp. ?) | 1 |
| ,, ,, & Chilomastix | 4 |
| ,, ,, ,, and Taenia ova | 1 |
| ,, ,, & Tricocephalus, Ascaris & Taenia ova | 1 |
| ,, ,, cysts | 4 |
| Cysts of Endameba with 8 nuclei (*E. dysenteriae* or *hominis* ?) | 6 |
| *Endamoeba hominis* (Casagrandi & Barbagallo 1897) | 4 |
| ,, ,, cysts | 1 |
| *Chilomastix mesnili* (Wenyon 1910) | 10 |
| ,, ,, & Blastocystis | 1 |
| ,, ,, & Giardia | 2 |
| *Giardia intestinalis* (Lambl 1859) | 6 |
| ,, ,, cysts | 11 |
| *Trichomonas hominis* (Davaine 1854) | 3 |
| ,, ,, & Trichocephalus ova | 1 |
| Ova of *Ascaris lumbricoides* (Linneu 1758) | 12 |
| ,, ,, *Tricocephalus trichiurus* (Linneu 1771) | 16 |
| ,, ,, *Ankylostoma duodenalis* Dubini (1843) | 8 |
| ,, ,, Taenia | 3 |
| ,, ,, Ankylostoma and Tricocephalus | 1 |
| ,, ,, Ascaris and Blastocystis | 1 |

The rest of the paper is concerned with technique and nomenclature, the author giving his reasons for the adoption of various names.

B. B.

Florand (A.) & Malleterre (F.). **Soixante-cinq cas de dysenteries rebelles récidivantes avec guérison.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1917. Feb. 8. 3 Ser. Vol. 33. No. 3–4. pp. 187–193.

These 65 cases comprised 14 in which amoebae and cysts were found in the stools, 4 in which Lamblia was found, 2 of bacillary dysentery, 1 Flexner and 1 Shiga, 3 of Trichomonas and 38 of indeterminate pathogenic agents, and had all been treated without success by the usual remedies for dysentery, such as emetine, Dopter's serum, arsenobenzol, silver nitrate, etc. Treatment by the method of Carpentier and de la Mothe, namely rest, special diet, and a new vegetable extract, the nature of which is not specified, resulted in complete cure in all the cases.

F. E. T.

Stettner (Ernst). **Gelenkrheumatismus und Ruhr.** [Rheumatic Joints and Dysentery.]—*Münch. Med. Woch.* 1917. June 26. Vol. 64. No. 26. pp. 854–856. With 2 charts.

This paper is based on an experience of 30 cases of joint affections following in the train of an attack of dysentery. There was usually an interval of 3 or 4 weeks between the cessation of the acute intestinal trouble and the onset of the joint symptoms. Conjunctivitis often preceded it, and in not a few cases, urethritis. Some patients suffered from nose bleeding, which first made its appearance while the intestinal symptoms were prevailing, and was repeated throughout the rheumatic stage.

*Joints affected.*—In all cases the knee was affected, usually on both sides, often the ankle and less frequently the toes. The hip joint enjoyed a comparative immunity. The upper extremity was attacked with less regularity, the elbow and shoulder most often, occasionally the wrist and rarely the fingers. Teno-synovitis was observed in the lower extremity twice.

*Fever.*—This was usually of short duration. When a new joint became affected there was a corresponding slight exacerbation of fever.

*Heart complications* were present in about 1/3 of the cases. The pulse gave the first intimation that there was something wrong. In the 3rd or 4th week the heart dulness was found to have extended more to the left and a systolic murmur developed at the apex.

*Conjunctivitis* developed in half the cases and in 30 per cent. of these it was the first symptom so that the patients were received into the ophthalmic department of the hospital. The condition cleared up in the course of a few days. Only 2 relapses occurred and they were severe cases in which the iris was also involved.

*Urethritis* with discharge of pus from the urethra was observed in 9 cases, in 2 of which it was the first symptom. Gonococcus was excluded. Gram-positive diplococci were present somewhat resembling Pneumococcus. Definite purulent urethritis was always accompanied by conjunctivitis but the converse did not always hold. The discharge usually cleared up in 2–6 days with no other treatment than rest in bed.

The prognosis hangs chiefly on the question of heart complications. Patients should not be moved from one hospital to another too soon :

otherwise relapses are liable to occur. Treatment should be designed to rid the body of the bacterial toxins which are the cause of the lesions. Salicylates and measures to induce sweating are recommended. The intestinal tract, which is the seat of the trouble, must not be overlooked.

E. E. A.

Cawston (F. G.). **Ipecacuanha in Chronic Dysentery.** — *Med. Jl. S. Africa.* 1917. Apr. Vol. 12. No. 9. p. 140.

The author gives an account of a case of chronic dysentery. The disease was contracted in East Africa in October 1916. Up till May he had five or six daily evacuations with blood and mucus. Emetine injections 70 in number, magnesium sulphate and paraffin produced no good result. Ipecacuanha was given, 30 grs., preceded by 30 ms. of liq. morph. hydrochlor. and each day a reduction of 5 grs. and 5 ms. respectively was made in the doses given. The results were excellent, the motions being freed from blood and mucus and reduced to one daily. The cause of the dysentery was not determined. [The period of observation after treatment is not stated.]

B. B.

Seymour (L. W.). **The Treatment of Dysentery, Wounds, etc., by a Combination of Internal Antiseptics.**—*Brit. Med. Jl.* 1917. July 28. pp. 115–116.

As a result of 25 years' experience in India and the Persian Gulf, the author advises the internal administration of quinine and carbolic acid in dysentery, but as he appears to regard it almost as a panacea—plague, malaria, septicaemia, erysipelas, puerperal fever and carbuncles all yielding to its action—one wonders whether he has not been deceived in his observations. A prescription and a method of mixing to obtain a clear solution are appended.

E. E. A.

## Book Reviews.

Laveran (A.). **Leishmanioses, Kala-azar, Bouton d'Orient, Leishmaniose américaine.**—521 pp. With 40 text figures, & 6 plates. 1917. Paris: Masson et Cie. [Price 15 fr.]

In a brief introduction the author points out that although Aleppo button has been known since the middle of the eighteenth century it was not until 1882 that kala azar was described for the first time; only in 1903 was it proved that these diseases were caused by parasites very closely related. Notwithstanding the fact that leishmaniasis is widely distributed not only in Asia and in Africa but in Europe and South America, it is still an unfamiliar disease to medical practitioners. The disease is also of importance to veterinary surgeons, as dogs suffer from a form of leishmaniasis which is probably identical with human kala azar and may well play a rôle in the propagation of this infection. During the 14 years which have elapsed since the discovery of *Leishmania donovani* and *Leishmania tropica* very many papers have been published on these protozoa and on the diseases which they produce, but they are so scattered in French and other journals that the practitioner can refer to them only with difficulty. For these reasons Laveran resolved to summarise in a single volume our knowledge on the subject of leishmaniasis.

The opening chapter deals with leishmaniasis in general. The author shows how the supposed differences between *L. donovani* and *L. infantum* disappeared one by one with the accumulation of experimental evidence and that consequently the designation *L. infantum* must be dropped in favour of the older name *L. donovani*. A detailed account of the geographical distribution of the various forms of leishmaniasis is given. Clinically leishmaniasis is met with in man in two distinct forms—visceral leishmaniasis or kala azar and cutaneous leishmaniasis or Oriental button, of which American leishmaniasis appears to be a variety. A study of the distribution of kala azar and that of Oriental button tends to demonstrate that we are concerned with two morbid entities clearly distinct, rarely endemic in the same localities and never observed in the same subject. Similarly in naturally infected dogs the two forms, visceral and cutaneous, are met with.

Some ten pages are devoted to an account of the technique required for the study of the parasite, its staining and cultivation.

In the pages dealing with the position of Leishmania in nomenclature an interesting summary is given of the work of Laveran and Franchini, Fantham and Porter and others on induced leishmaniasis.

The remainder of the volume is divided into four sections which deal respectively with:—

1. Visceral Leishmaniasis or Kala Azar.
2. Canine Leishmaniasis.
3. Cutaneous Leishmaniasis or Oriental Sore
4. American Leishmaniasis of the skin and mucous membranes.

Each section is complete in itself and deals exhaustively with the subject concerned. For example the section dealing with visceral kala azar is divided into twelve parts:—(1) Historical. (2) Geographical distribution. (3) Etiological factors such as age, sex, race, climatic conditions, etc. (4) Leishmaniasis in the child and in the adult. (5) Experimental work in animals. (6) Pathology. (7) The parasite *Leishmania donovani* (8) Treatment. (9) Diagnosis. (10) Prognosis. (11) Treatment, and (12) Prophylaxis. The other three sections are equally comprehensive.

With regard to the value of intravenous injections of tartar emetic in the treatment of Leishmania infections, Laveran points out that the credit of the discovery belongs to Gaspar Vianna who in 1913 published his observations on the value of this drug in American leishmaniasis. The following year, 1914, Castellani treated a case of Indian kala azar by intravenous injections of tartar emetic, and Fowler's solution and his yaws mixture orally; he attributed the remarkable amelioration obtained to the use of tartar emetic. Di Cristina and Caronia (February 1915)

were the first to use intravenous injections of tartar emetic in Mediterranean kala azar and later in the same year (July 1915) Rogers published observations on the use of the drug in Indian cases.

The general plan of the volume is that adopted by the author and Mesnil in their classical work "*Trypanosomes et Trypanosomiases.*" It is unfortunate that a volume containing so much information and entailing in its production such an enormous amount of labour should to some extent suffer in usefulness from the lack of a detailed index. References are given at the foot of the pages, and at the end of the book is a table of contents, but personal experience in the use of "Trypanosomes et Trypanosomiases" has impressed the reviewer with the fact that the absence of a complete index in volumes of such value as books of reference, is an undoubted loss.

It is impossible to write too highly of the merits and value of this book. As Laveran claims in the introduction, the time had arrived when it was most desirable to summarise in a single volume our present knowledge of Leishmania infections. This was the author's aim and he has accomplished it in the same careful and thorough manner which characterises his previous works "Paludisme" and "Trypanosomes et Trypanosomiases." To those familiar with these volumes one need not say more in commending "Leishmanioses."

W. Yorke.

Brahmachari (Upendranath) [M.A., M.D., Ph.D., Rai Bahadur]. **Kala Azar. Its Treatment.** With a Foreword by the Hon. Surgeon-General W. R. Edwards [C.B., C.M.G., M.D., I.M.S.].—v+ 123 pp. With 6 plates & 17 charts. 1917. Calcutta: Butterworth & Co., Ltd. / Price 8*s.* 6*d.*

Readers of this *Bulletin* are familiar with the author's previously published work upon the treatment of kala azar [Vol. 8, pp. 5 and 406].

This little book is a compendium of the subject in all its aspects. It contains 116 pages of text and is divided into twelve chapters. The first four of these, occupying 32 pages, describe, with numerous details of cases the older methods of treatment by alkaloidal therapy, production of leucocytosis, alkalies, bone-marrow and extracts of ductless glands, vaccines, mercury, arsenic and some other drugs, and X-rays.

Chapter V deals with treatment by means of antiseptics. It is shown that formaldehyde in the few instances in which it was tried acted like a specific. The three succeeding chapters, comprising half of the volume, discuss treatment by means of antimonial preparations. Their respective values in trypanosomiasis and kala azar are assessed, their doses are given, and the methods of administration and indications for their use are described. Their toxicity is discussed, and the symptoms of poisoning which may arise in the course of treatment are clearly set out. The question of retention of antimony in the system is concisely dealt with, it being shown that when introduced into the circulation in metallic form it remains in the liver and spleen for a much longer time than when injected as a soluble salt. A large number of antimonyl preparations have been tried, for the first time, by the author, such as, for instance, antimony metalone, aniline emetic, lithium antimony tartrate, and luargol (a compound of antimony, silver and arsenic). The results of these trials are described, but it is difficult to estimate their value on account of the small number of cases treated. Chapter IX is devoted to a short account of two cases which, at the time of going to press, were under treatment by intravenous injections of a 1% solution of bismuth-sod-tartrate in distilled water, with apparently satisfactory results. This drug has not hitherto been tried in kala azar. Chapter X discusses colloidal therapy and combined therapy. It will be remembered that colloidal metallic antimony was first used by the author. The method of preparation is described in another part of the book. The section on combined therapy discusses the probable advantages of uniting the action of various drugs such, for instance, as antimony, arsenic, and formaldehyde.

The concluding two chapters deal with the treatment of complications, dietetic and hygienic measures, and prophylaxis, and the author closes with a forecast in which he looks ahead with confidence to the time when a colloidal preparation of antimony will be produced, capable of effecting, in minute doses, an absolute destruction of Leishmania in the body though itself almost or completely non-toxic.

The book is written in a clear and concise manner and should prove useful and suggestive to those interested in the treatment of kala azar. Many of the cases described are well illustrated by temperature charts and tables showing the result of blood examination. A full account is given of the technique for intravenous injection and the apparatus is pictured. A few orthographical errors will doubtless be eliminated in future editions.

E. J. Wyler.

Crowe (H. Warren) [M.D., Oxon] & Sprawson (C. A.) [M.D., M.R.C.P., I.M.S.]. **Consumption. Treatment at Home and Rules for Living.**—37 pp. 2nd Edition. With Sample Chart for Temperature and Pulse. Calcutta: Butterworth & Co. (India), Ltd. 1917. [Price As. 8 net]. Also in Urdu 72 pp. (same Publishers). [Price As. 8 net.]

Some little time ago Dr. Warren Crowe wrote a little shilling book with the above title for use in temperate climates. Major Sprawson has adapted the work for use in India or any similar region. Its rules are for guidance of those who must be "up and about" and get what treatment they can in their own homes. Dwellers and workers in India who already possess the eighth edition of "Moore's Family Medicine and Hygiene for India" will find similar simple rules on page 215. Little comment is needed. The "Rules" in this little book, when they can be, and are, carefully carried out will do much to relieve suffering and may, if the tubercular disease of the lungs is in an early stage, help towards cure. The value of a respirator under certain conditions is not mentioned, and with regard to Rules 15, 16 and 17 (exercise) it should be laid down that in climates like that of India where even slight exertion is followed by free perspiration, the body should be covered by a warm wrap or overcoat after exercise. At such times a "chill" is a serious matter. Not only does it destroy the good done by exercise but it will seriously affect any process of auto-inoculation that may be taking place.

The cheap Urdu version brings help to educated Mahomedans. No doubt similar editions for Bengalis and Hindi-speaking races will be published. But no book, however cheap and simple in diction, can reach the remaining illiterate millions. Some of these get help and advice from neighbouring Hospital or Dispensary but of millions it must be said that nothing can reach them at present. Since these must toil to live their ignorance may be a partial blessing. For as Montaigne wrote of the French peasant of the 16th century:—"The names by which they call their maladies take off the edge and soften them; phthisis is to them a cough, dysentery only a looseness, pleurisy no more than a stitch; and as they name them gently so they bear them."

J. H. Tull Walsh.